THE

physical therapy

REVIEW

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Poliomyelitis, A Review of Current Concepts
— SPENCER

Speech Defects Resulting from Bulbar Poliomyelitis
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A Modification of the Standard Wet Pack
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Table of Contents:

Poliomyelitis, A Review of Current Concepts —William A. Spencer, M.D. 259

Speech Defects Resulting from Bulbar Poliomyelitis—Elizabeth Zausmer 262

A Modification of the Standard Wet Pack —Leon L. Rackow, M.D., and Zachary Taylor 265

A Comparison of Chronaxie and Manual Muscle Testing of Muscles Affected by Poliomyelitis—Roxie Morris, M.A. . . . 267

Poliomyelitis in Wytheville and Southwest Virginia (Summer of 1950)—Kathryn Wheeler and Clarice Spindle 272

Polio in Pittsburgh—Kathryn L. Kelley . 275

Editorials 276

Reprints Available 286

Association Activities 287

Membership News 288

General News 289

Index to Current Literature 293

Abstracts 294

Meet Our New Contributors 303

Book Reviews 303

List of Approved Schools 304

Available in a Microfilm Edition.

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Volume 31 **July 1951** **Number 7**

Poliomyelitis, A Review of Current Concepts

William A. Spencer, M.D.

Poliomyelitis is a common infectious disease caused by a filterable virus, unique in that the only proved natural host is man. The disease itself is unique in that the most common form of the infection is seldom recognized and the more rare paralytic form of the infection has been observed for centuries. This obvious recognition of the exceptional or paralytic form of the infection has given rise to many misconceptions starting with the common name, "infantile paralysis," for indeed, most of the paralytic cases do not occur in infancy.

Our present parameters of knowledge concerning the nature of the disease delimit the following facts:

(1) *The Nature of the Virus:* The poliomyelitis virus is one of the smallest of the known viruses. There are many strains of the virus, so that the agent may vary from one region to another and from one epidemic to another. The virus can be stored indefinitely in the frozen state, but can be destroyed by heat (65°C. for thirty minutes). The virus is pathogenic for man and for primates such as the great apes, chimpanzees, and monkeys under experimental conditions.

(2) *Epidemiology:* Current epidemiological thinking has brought to the foreground the very remarkable fact that the widespread occurrence of unrecognized or unapparent cases may outnumber obvious paralytic cases by as much as 100:1 or even 1,000:1. This has been established by the isolation of the causative agent from the stools of contacts and even non-contacts in surprising numbers.

In a recent study in Chicago, virus isolation from the stool and statistical analysis indicated widespread dissemination of the virus in the population, as evaluated by the presence of the virus in the feces. Further substantiation of this concept of widespread unapparent contact with the virus has been found in the demonstration of antibodies against certain major groups of the virus in the blood of older children and adults.

It is not clear what proportion of contacts with the virus actually represent *systemic* infection.

The virus is probably distributed chiefly by person-to-person contact, from the oropharynx or from the contents of the lower gastrointestinal tract. The virus may be spread through sewage and water supply and by flies and food because of heavy virus contamination of the feces in the first two weeks of the disease.

(3) *Incidence and Distribution:* The disease has a marked summer incidence with a peak occurrence in July, August, and September. Actually, winter occurrence is noted in small numbers, es-

From the Southwestern Poliomyelitis Respiratory Center, Jefferson Davis Hospital, and the Department of Pediatrics, Baylor University College of Medicine, Houston, Texas.

pecially in temperate zones. Age incidence shows world-wide variation and localized changes with the passing of each epidemic season. Difference of sex distribution is not striking. The trend in the United States in the past five years has favored increasing incidence of the disease in older age groups (over 15 years). Total morbidity in the United States in recent years has remained at the highest levels recorded, in contrast to a previous single peak every five to seven years.

TOTAL NUMBER OF DIAGNOSED POLIOMYELITIS PATIENTS
(paralytic and non-paralytic)

1948	1949	1950
27,626	42,366	33,344

United States of America

The preceding may be summarized: (1) the virus is widespread; (2) there is probably frequent contact between man and virus, with ensuing unrecognized infections in some instances and with development of some form of immunity; (3) the high incidence of unapparent infections neutralizes and makes unwarranted the usual attempts to prevent spread of the disease in a population group; (4) extra-human sources of distribution of the disease, such as the fly, have been demonstrated; (5) the occurrence of clinically observed forms of the infection has shown a persistent unparalleled increase in recent years; (6) in a relatively small number of infected humans, the combination of circumstances which tend to convert a mild, unapparent infection to a severe central nervous system disease is yet to be unraveled.

Once the virus gets into the body and systemic infection is established in the central nervous system, the outcome for the *individual* is not predictable. However, on a statistical basis, we believe that the *chance* of permanent residual paralysis is not uniform. In our experience, approximately 40 percent of the cases have no permanent residual paralysis, and 30 percent have permanent residual paralysis of mild character, not productive of functional handicap. In the remaining 30 percent serious residual paralysis will result, and this group will include the 5-8 percent of the total who will die; this is subject to local and national variation but disproves a common belief that, once a diagnosis is made, permanent paralysis inevitably results.

The typical central nervous system form of poliomyelitis is characterized by widespread, early, preparalytic virus invasion of large motor nerve cells in the whole axis of the central nervous system and in the reticular formation of the brain stem. This virus invasion probably first produces impairment of function of these cells and ultimately processes of either death or recovery within fourteen to twenty-one days. Impairment of motor function results early, from the lack of physiological continuity, and, later, from the lack of anatomical continuity of the segmental spinal or cranial motor reflex arcs. This eliminates the motor nerve cell discharge, the source of the basic stimulus for the maintenance of striated muscle tone. Impairment of function of the reticular cells can interfere in some unknown way with the central control of several vital autonomic functions, such as respiration and circulation. Depending upon the localization of unusually severe impairment of function, or widespread death of motor nerve cells, and the relative proportion of motor nerve cells innervating a given muscle bundle, clinical evidence of the central disease is manifested by loss of muscle tone and failure of higher involuntary or voluntary control to affect an appropriate muscle response. Thus, one sees the loss of flexive movement of an extremity, ineffective swallowing, or incomplete contraction of the diaphragm or intercostals in the act of respiration. In the most severe forms of the disease, vital brain stem involvement may produce rapid heart rate, high blood pressure, peripheral circulatory collapse, extremely high body temperature, ineffective coordination of the muscular act of respiration, and changes in mental status with confusion, delirium, or coma. Thus one can readily perceive that the extent of the damage and the degree of its spontaneous reversibility, the locality and magnitude of the death or recovery of the infected nerve cells, *determines* the site and the degree of residual paralysis or death. This is subject to wide variation and at present remains essentially unmodifiable.

Therefore, the pertinent considerations are:

(1) Is it possible to prevent the severe form of the infection?
(2) Is it possible to modify the course of the disease once it has produced paralysis?
(3) Is it possible to save the life of the patient with the most severe infection?
(4) What can be done to obtain maximal recovery and rehabilitation of the severely paralyzed patient?

The most perplexing fact, in reference to the prevention of severe infections, is the enigma of unusual susceptibility in certain individuals. This is especially true in view of the extensive dissemination of the virus. Oral operations, such as tonsillectomy and adenoidectomy, expose nerves

directly to the virus and increase the chance of contracting the disease during the epidemic season. Pregnant women are known to be especially susceptible to poliomyelitis. Healthy children, subject to unusual exertion or fatigue, are more susceptible to the severe disease if they are incubating a poliomyelitis virus infection. The significant inference is to avoid excessive exertion or fatigue, when there is mild illness with vague symptoms, during the poliomyelitis season.

To the second question, is it possible to modify the course of the disease once it is established in severe form, it is certain that there is *no* available agent which will favorably influence the recovery of the nerve cell once it has become infected. The very innate resistance of the cell to this damaging agent determines the outcome and accounts for the great variability in the course of the disease. Thus, treatment may be symptomatic, directed toward the relief of painful muscle spasm if it is present; in the grave situation, anticipatory, so that at the optimal time there is effective supplementation of such a vital function as respiration. Early physical therapy is of considerable importance in the preservation of remaining muscle, prevention of deformity, and in the attainment of maximal functional recovery by proper positioning for comfort, active and passive motion, hydrotherapy, assistive exercises, etc.

The prevention of death requires a team of physicians of the various specialties and the inclusion of specialized equipment and therapeutic apparatus in a general hospital. This approach has resulted in the preservation of a higher percentage of those severely ill patients who would ordinarily succumb from failure of respiration. The keynote of this approach is the careful, progressive, individual analysis of respiratory defects, determining the coordinate services of internist or pediatrician, otolaryngologist, neurologist, orthopedist, physiatrist, and physiologist. A development of this type has required the establishment of respiratory centers. Through this, it is expected that more accurate criteria, more definitive indications for effective treatment, will be elaborated which will permit maximal prevention of respiratory deaths.

Large clinical research centers have made advances in synthetic respiratory devices, in the development of specialized apparatus for analyzing the breathing defects in a more accurate and clinically applicable fashion.

It should be cautioned that there are other fatal complications of severe poliomyelitis which are yet to be fully evaluated and managed in order further to diminish mortality.

The attainment of maximal recovery and rehabilitation of the severely paralyzed patient can be accomplished by:

(1) Active early physical therapy to prevent disuse atrophy of remaining muscle tissue

(2) Prevention of deformities produced by unequal muscle pull, contractures, and by total inactivity

(3) Splinting of partially paralyzed extremities to prevent contractures, to permit effective action of remaining muscles, and to provide stabilizating supports for loss of postural musculature

(4) Encouragement of compensatory development of remaining muscles (especially of value in the youngest patients)

(5) The development of special aids and supports to the upper extremities, coupled with the development of individual skills of a nature which will promote satisfactory occupational pursuits for the handicapped

(6) Careful successive and progressive medical supervision of the patient

(7) Adaptation of the patient's psychological attitude to obtain his maximal effort at rehabilitation commensurate with his individual handicap (The potentials in this sphere are remarkable.)

(8) Coordination of hospital and community facilities to prepare for the early return of the patient to the home environment

(9) Provision of volunteer services to accomplish special care and sheltered workshops which will lead to an occupation and thus accomplish maximal adjustment to the individual situation

In summary, the objectives of understanding the natural history of the disease are being accomplished through virus research and epidemiological study. The problems in the medical management of the clinical disease are being approached through the coordinate activity of diversified specialties and community facilities. Collectively, this medical endeavor is harvesting gratifying results in a crippling disease for which there is neither preventive measure nor completely adequate treatment.

Speech Defects Resulting from Bulbar Poliomyelitis

Elizabeth Zausmer

It has often been stated that patients afflicted with bulbar poliomyelitis either recover completely or succumb as a result of the severe involvement of the bulbar area of the cord. This statement is probably still true of the patient with involvement of the medullary centers which control respiration and circulation, but it does not pertain to those patients who have cranial nerve involvement. Although the majority of deaths in poliomyelitis epidemics is still due to the bulbar form of this disease, there has been a considerable reduction in its mortality rate. Many patients who are suffering from cranial nerve involvement, and who would have died in the past, now survive with residual involvement of cranial nerves. These patients show a great variety and many combinations of symptoms. This discussion, however, will be concerned only with the involvement of the nerves controlling the mechanisms of mastication, swallowing, and speech; that is, the fifth, seventh, ninth, tenth, and twelfth nerves.

Fifth (Trigeminal) Nerve: Involvement of the motor division results in paralysis of the muscles controlling jaw movements (temporal, masseter, pterygoids); this may cause disturbances in chewing and mastication. In unilateral lesions the jaw may deviate to the paralyzed side, and thus cause difficulty in proper enunciation. This, however, is rarely seen in poliomyelitis.

Seventh (Facial) Nerve: Paralysis of the facial nerve is fairly frequent in bulbar poliomyelitis. The paralysis may involve the upper or the lower or both parts of the face and, accordingly, affect different facial muscles engaged in processes of mastication and speech. The patient cannot whistle or blow out his cheeks. Food collects between cheek and jaw. This lack of control of lips and cheeks also prevents him from correctly producing the sounds p, b, t, d, ch, j, and g, which are known as the "plosive" sounds.

Ninth (Glossopharyngeal) Nerve: Paralysis of this nerve occurs concomitantly with the tenth nerve; it contributes to difficulties in swallowing.

Physical Therapy Department, The Children's Medical Center, Boston, Mass.

Tenth (Vagus) Nerve: This nerve supplies the organs of voice and respiration.

Unilateral paralysis causes weakness of the soft palate, pharynx, and larynx. The act of swallowing calls for perfect innervation of soft palate, faucial pillars, vocal cords, elevators of the larynx, and depressors of the epiglottis. Difficulties in swallowing are demonstrated by regurgitation of food through the nose, accumulation of food or fluid in the pharynx, and cough due to faulty function of the mechanism closing the larynx. There will be excessive accumulation of saliva in the throat, because of the inability to swallow fluids, and the patient may literally choke in his own secretions.

Changes in the voice, such as hoarseness, nasality, or progressive weakness or difficulty in speech are due to involvement of the vagus nerve. They are early symptoms of bulbar poliomyelitis and should be interpreted as danger signals pointing to obstruction of the airways.

Complete bilateral paralysis of the vagus nerve is almost always fatal. There is complete paralysis of the pharynx, rendering both vocal cords motionless in a halfway position between abduction and adduction. The glottis cannot close, the patient can neither speak nor breathe. This leads to suffocation, unless a tracheotomy is performed.

Twelfth (Hypoglossal) Nerve: This nerve supplies the muscles of the tongue. In unilateral paralysis the protruded tongue deviates to the paralyzed side, causing slight impairment of mastication. Bilateral paralysis results in inability to protrude the tongue at all.

Frequently, it will be found that difficulties in swallowing, regurgitation of food, and pooling of saliva have ceased but speech has not readjusted itself to its former normal function. It is generally thought that the act of swallowing, based on a more primitive function of the nervous system, will recover more spontaneously than the infinitely more complicated and more highly developed voluntary function of speech. It has also been observed that while there may be almost complete paralysis of the soft palate and associated inability to move the palate in speaking, the reflex activities

of swallowing, laughing, etc., frequently may be impaired only partially or not at all.

Because the speech mechanism is so complex and highly developed it has to be given special consideration in the general reeducation program which follows an attack of bulbar poliomyelitis. It is a regrettable fact, however, that speech deficiencies resulting from this form of poliomyelitis have received much less attention from medical personnel than other phases of the disease. This accounts for the fact that medical literature contains very little information for the physical therapist on that subject. This paper, therefore, tries to summarize a few methods and several suggestions found in the general literature of speech therapy which may be applicable to this particular problem.

Nasality of the Voice

In normal speech the production of the majority of sounds requires closure of the posterior pharynx to interrupt the passage of air between the mouth and the nasal airway; only in the production of the nasal sounds—m, n, and ng—the soft palate is not raised against the pharyngeal wall. It is apparent that, when weakness of the soft palate occcurs in bulbar poliomyelitis, escape of air through the nose will cause a nasal quality of all sounds. The seriousness of this impediment can range from a slight twang (which may have existed before the onset of poliomyelitis) to so much nasality in the formation of all sounds that speech may become incomprehensible. The patient, in order to overcome the embarrassment caused by his speech difficulty, hurries on with what he has to say, pronouncing all vowels and consonants nasally, slurring and swallowing the words until sentences merge into a mass of unintelligible sounds.

In order to make the soft palate more pliable and movable, several types of blowing exercises are suggested, such as:

blowing a penny whistle or flute;
humming and blowing on a comb covered with tissue paper;
blowing up balloons;
blowing on paper boats set on a bowl of water;
blowing a ping pong ball or a feather on a table with a smooth surface, or a ping pong ball on a bowl of water (this can be played with a paper straw or a stick of macaroni).

Blowing soap bubbles has been widely used to teach a child how to direct the air stream through the mouth instead of through the nose, or through the nose or the mouth *at will*.

All authorities agree that it is most important that the patient realize the difference between the nasal and non-nasal sound. W. Kingdon Ward suggests the following series of exercises: "Let the patient (a) close the lips and sniff fairly rapidly several times in and out through the nose; (b) pinch the nose between finger and thumb, and meanwhile draw the breath quickly in and out through *nearly* closed lips; (c) the same as (b), at intervals loosing the hold on the nostrils and immediately resuming it. The breath, being strongly directed through the lips, hardly has time to return to the wrong direction. The intervals of letting go can gradually be lengthened. The three parts of this exercise should be alternated. Keeping the lips close together in (b) gives *the sensation of breath on the lips*, so that the patient is conscious of its egress in that way far more than if the mouth were quite open. The alternation impresses on him the *difference of sensation* between breath emitted through the nose and that emitted through the lips, and thus helps the required mode of emission."

Berry and Eisenson suggest the pronunciation of the word "father" alternately nasally and non-nasally while watching the velar movement in a mirror. Yawning with open lips while observing the rising of the palate is another aid in the kinesthetic approach to soft palate work. Alternately pinching and releasing the nostrils while saying a sentence containing only non-nasal sounds (e.g., "She waited a week for a reply to her letter."), and holding a mirror horizontally under the nose, help in determining whether velar closure is improving. As long as the mirror still clouds, the closure is not yet perfect. It is advisable to start practicing on single vowels (particularly on those sounds which are least likely to be nasalized) and to progress to whole sentences only later.

Some clinicians believe that raising the voice results in a more effective velar closure; other authorities disagree on that point.

Most speech therapists seem to believe that since the consonants generally show greater distortion than the vowels, training should start with them. However, production of the sound, "ah," necessitates maximum opening of the throat and should be used early, for awareness of the lifting of the soft palate, either kinesthetically or visually by use of a mirror. The sounds "i" and "u" normally have a higher degree of nasality and the more intensive use of these sounds may have to be postponed until better control of the palate has been obtained.

"Plosive" Sounds

The patient with a weak or non-closing soft palate has difficulty in building up enough intra-oral pressure to produce the plosive sounds (p, b, t, d, ch, j, g). The air stream necessary to pronounce "s" and "z" also escapes through the nose instead of through the mouth. There are two reasons for this deficiency: weakness of the soft palate and resulting nonclosure allowing escape of air through the nose; or inability to blow up the cheeks due to the weakness of the orbicular lip muscles, with the air escaping there. A simple test consists in having the patient blow up his cheeks while alternately pinching and releasing his nostrils. If the cheeks flatten and the air escapes through the nose when the grip is released, weakness of the soft palate exists. If the patient is unable to blow up his cheeks, despite pinching his nostrils, it may be assumed that the lips cannot be closed tightly enough and that air escapes between them.

Backus states that the most important goal in obtaining a proper plosive sound is "first to obtain action of the back of the tongue and, second, at the same time, to inhibit action of the tip of the tongue. Often this can be achieved by merely having the child imitate the teacher, e.g., she (the teacher) makes the "k" sound several times and then asks him to repeat it. If so simple a method does not work, the general idea of back placement may be caught by having him produce a slight cough several times. The teacher may ask the child to place the tongue firmly down below the lower teeth and to hold it there while he tries to imitate her in making the sound. If the tongue tip persists in flying up, it may even be held down with a tongue depressor until the child is able to inhibit such action voluntarily. . . ."

Consonants

Nemoy offers excellent material on the correction of defective consonant sounds. Each consonant is discussed in detail, starting with an analysis of lip formation, description of components involved in the formation of each sound, combinations with other sounds, errors in production, and detailed suggestions for their correction. There is a voluminous section on drills and practice material which should be a most valuable help in providing analysis and teaching material for almost any speech defect.

All speech exercises and training procedures—such as breathing and blowing exercises, production of isolated sounds, practice of syllables, words, and sentences—are, however, only preparatory stages for the attainment of the final goal: correct *everyday speech*. All authorities stress the point of view that the degree of accomplishment which the child reaches in a clinical or training situation does not necessarily reflect the amount of carry-over value into his daily activities. The following suggestions by Ainsworth illustrate the complexity of the problem and may be helpful in solving it:

"In making (the child) want to change, the clinician must first make certain that he (the child) *does* realize the difference between the correct and incorrect production, not just in the sense that there is a mechanical difference, but in relation to the larger implications of *how they sound* and *what* undesirable effects the wrong production has on his speech. In other words, *it must become a difference which makes a difference.*

"Then the clinician must be certain that the child has been assigned a task which *can* be accomplished. Many times, the teacher gives an assignment in such a way that it cannot be successfully completed. When the child has been taught to *check himself* in the clinic situation and can do so reliably, then he is ready for outside assignments. In the author's opinion, there is only one reliable, psychologically sound way to arrange these. The child must be told to use the correct sound for a short period of time, a minute or two, or even just one sentence. Futhermore, the sound must be associated with routine activities so that practice will *not be forgotten*. Then there should be a gradual increase of the length and frequency of these specific periods. All assignments should follow the same pattern—correct use for a short specific period—associated with other routine activities of the day so that they will not be forgotten. During the short periods, the child must concentrate on getting the particular sound correct *every time it occurs*. Then, during the rest of the day, it may be forgotten. . . . After the initial, brief 'practice' carry-over periods, some excellent routine activities with which to associate correct usage are oral reading periods, specific daily class sessions in school, meal times, et cetera. General recreation periods should be the last to be included in the 'correct usage' time. . . ."

It becomes obvious that even though bulbar poliomyelitis may seem less crippling than the other forms of this disease, bulbar poliomyelitis, too, requires intensive reeducational work if the patient is to be completely rehabilitated. This is the more important since speech is one of the chief components of our personality; the patient's psychological recovery will not be complete unless he regains his normal means of expression.

Summary

1. The impact of paralysis of the cranial nerve nuclei group in bulbar poliomyelitis is described; the effect on the mechanism of speech is discussed.
2. Weakness of the soft palate is frequently found as a result of bulbar poliomyelitis and brings about a nasal quality of the voice.
3. A summary of suggestions on the correction of nasality is given.
4. Reasons for the production of defective "plosive" sounds as a consequence of bulbar poliomyelitis are cited; literature and material for reeducational work are given.
5. The importance of achieving a carry-over into daily activities is stressed.

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A Modification of the Standard Wet Pack

Leon L. Rackow, M.D., and Zachary Taylor

This report describes a modification of the wet pack procedure which has been used by one of us (Z.T.) over many years and which, during the past five years, has been in daily use in our hospital. With this procedure a considerable amount of work simplification and saving of personnel hours is made because it eliminates the necessity of unfolding and refolding wet sheets. There is improvement in sanitation because a dry sheet is used between the outer blankets and the packing wet sheets and, since the hands and feet do not come in contact with wet sheets, the spread of fungus infection is minimized. The hands and feet are not included in the snug wrapping of the wet pack, and there is considerable freedom of movement at the wrist and ankle joints, leaving the patient with a sense of freedom from constraint and enhancing the effectiveness of the procedure.

Since the fingers and toes are not in contact with the wet sheet, wrinkling and shrinking of the toes and fingers is minimized. There is always sufficient blanket to cover the shoulders, even of very tall patients, to prevent any pulmonary com-

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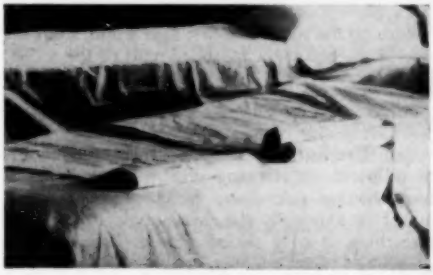

Fig. 1. Preparation of Bed.

plications since at a point between the clavicle and scapula the apex of the lungs is close to the surface of the body.*

Preparation of Bed

Place first blanket lengthwise on bed with lower edge touching floor at foot of bed and second blanket crosswise on upper part of bed folded over about four inches from head of bed. If additional length of blanket is needed for exceptionally tall patients this may be unfolded and drawn over patient's shoulders so that they are completely covered. A bath towel should be placed over this head blanket and tucked under the upper edge a little. This keeps the woolen blanket from direct contact with patient's face and neck and makes a more comfortable pack. It may also be used as supplementary cephalic cold by keeping it soaked in ice water, if the patient's pulse has remained high or he is hyperactive. A dry sheet is opened and placed lengthwise and centered on the bed. Three large sheets are thoroughly soaked in tap water at prescribed temperature and wrung out. These sheets are still folded as they come from the laundry. Unfold all sheets lengthwise until they are extended full length but remain folded four thicknesses; no refolding is necessary.

Roll all sheets to required length. Place first arm sheet on bed so that top edge of sheet will reach to top of patient's shoulders and loose end overhangs edge of bed about one inch; rolled end is turned downward and placed near other edge of bed. Place second arm sheet about one to two inches lower on bed than first arm sheet with loose end coming just to edge of bed, the roll turned upward, and placed on top of other roll. This sheet will reach just to the patient's wrists. Place leg sheet on bed so that the loose end comes just to edge of bed and rolled end is turned downward on same side of bed as the rolled ends of arm sheets. In this way all of the rolled ends are on the same side of bed and patient enters the bed from the opposite side, lessening the chances of disturbing the rolls. The first aide works from the side of the bed with the rolled ends of the sheets. *(See Figure 1.)*

Procedure

(a) The first aide raises patient's arm on side of rolled sheets, drawing sheet between arm and body. Second aide draws patient on side facing him. First aide pulls arm sheet snugly around arm, smoothing it over patient's back. Patient is returned to reclining position. First aide reaches across bed grasping short end of sheet with one hand and patient's wrist with the other hand, rolling patient on side toward himself. Second aide places rolled end of sheet between body and arm. First aide lowers arm and second aide pulls arm sheet snugly around arm, smoothing it over patient's back. Patient is returned to reclining position. Second aide lifts patient slightly while the first aide pulls sheet out from under patient. This leaves one end of sheet on each side of patient which may be grasped by the two aides to draw patient's arms to side of his body in case he has been resistive or pack is too loose.

(b) The second arm sheet is now wrapped around body, both aides turning patient from side to side as necessary, carefully unrolling and pulling sheet smoothly over patient's body, leaving no wrinkles. This sheet reaches from top of patient's shoulders downward.

(c) First aide draws loose end of leg sheet over patient's leg and under the other leg and second aide holds up patient's feet while the first aide wraps the remainder of the sheet around patient's legs.

(d) First aide draws dry sheet snugly over patient's shoulder, squaring at the shoulders; second aide folds bottom part of sheet up over the patient's legs and feet and first aide now continues with other shoulder, drawing sheet snugly and squaring at the shoulder as before, while second aide continues enveloping patient's legs with rest of sheet.

(e) First aide squares one side of blanket over shoulder, carries it across chest to opposite shoulder, folding the remainder of blanket under the patient, then squares blanket over opposite shoulder in the same manner. Second aide folds end of blanket over patient's feet towards the knees, squaring one side and folding over legs; the opposite side of the blanket is drawn diagonally over the ankle toward the knees so that the top fold misses the patient's feet and wraps around patient's legs. Thus the heavy weight of four folds of blanket does not rest on patient's toes.

Summary

A modification of the standard wet pack is described which has several advantages over that usually employed. This procedure is more acceptable to the patient, causes less resistance to the treatment, and seems to be more effective. The sanitary aspect is greatly increased and there is considerable work simplification and saving of personnel hours.

*Wright, R.: Hydrotherapy in Psychiatric Hospital, Tudor Press, Boston, 1940.

A Comparison of Chronaxie and Manual Muscle Testing of Muscles Affected by Poliomyelitis

Roxie Morris, M.A.

The purpose of this study was to make a comparison between the manual and the chronaxie methods of muscle testing to determine: 1. what correlation, if any, exists between manual and chronaxie muscle testing; 2. if the chronaxie reading differs for muscles which function against gravity and those muscles which function only if gravity is eliminated; 3. whether one method of testing can be used to predict results that might be obtained by the other method of testing.

Muscles were tested both manually and electrically on sixteen patients who had varying degrees of functional loss of muscle power due to anterior poliomyelitis. Male and female patients in the subacute and chronic phases of the disease were chosen. The ages of the patients varied from eleven to forty years. In the series of subjects which were made available for testing there was more lower extremity involvement, therefore the leg was chosen as the testing area. Due to the time involved, only a limited area of the body could be tested. The muscles tested in each patient were the lateral and medial heads of the gastrocnemius, anterior tibial, peroneus longus, peroneus brevis, and extensor digitorum longus.

Methods

Manual Testing. The Legg and Merrill method of manual testing which employs gravity and manual pressure as resistance was used. The ability of the muscle to function was recorded as follows:

A. Muscles which function against gravity
   1. Normal (N), can overcome a greater amount of resistance than a "good" muscle
   2. Good (G), can raise a part against outside resistance as well as gravity
   3. Fair (F), can raise a part against gravity

B. Muscles which function if gravity is eliminated and friction minimized
   1. Poor (P), produces movement with gravity eliminated but cannot function against gravity

C. Muscles which cause no movement and are tested by palpation.
   1. Trace (Tr), muscle can be felt to tighten but cannot produce movement
   2. Gone (O), no contraction felt

On the basis of the manual testing methods patients were positioned so that the proper test movement could be performed against gravity or with gravity eliminated. In some cases of severe paralysis the test positions had to be modified to accommodate the ability of the patient.

Electrical Testing. A machine, the Galconotron,* equipped to produce an automatically interrupted galvanic current and to charge and discharge condensers, was used in determining the muscle chronaxie. The galvanic current was interrupted at infinite intervals in comparison to muscle contraction time. The time of the discharge of each condenser is indicated on the dial of the machine.

At the beginning of the chronaxie testing the machine was set on galvanic current with the voltage at zero. A three-by-one-inch pad electrode connected to the positive pole was moistened with saline solution and placed firmly against the skin opposite the belly of the muscle which was being tested. A pointer electrode connected to the negative pole was moistened and placed on the muscle belly. As the voltage was gradually increased and the pointer was rolled over the muscle, a contraction was produced. The point at which the best contraction was elicited was considered the motor point of the muscle and was marked with skin pencil. The same procedure was followed to find

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(This work was done in cooperation with a research program carried on by Dr. Irving Rehman, Associate Professor in the Medical School Anatomy Department of the University of Southern California, under the sponsorship of the Baruch Committee on Physical Medicine.)

*Machine developed by Dr. Rehman for neuromuscular testing in a program concerned with poliomyelitis.

TABLE I

MANUAL GRADING DISTRIBUTION FOR EACH MUSCLE TESTED

Muscles	Manual Grades						
	Normal	*Good*	*Fair*	*Poor*	*Trace*	*Apparently Zero*	Total
Medial Gastrocnemius	2	14	7	5	1	6	35
Lateral Gastrocnemius	2	14	6	5	1	6	34
Anterior Tibial	14	2	2	3	4	8	33
Peroneus Longus	15	5	5	1	4	2	32
Extensor Digitorum Longus	14	7	3	2	2	4	32
Extensor Hallucis Longus	17	4	3	1	3	4	32
Peroneus Brevis	11	2	4	1	4	4	26
TOTAL	75	48	30	18	19	34	224

and mark the motor point of the corresponding muscle on the opposite leg.

After the motor point was determined the pointer electrode was placed on the marked area and a contraction was again produced. The contraction was reduced to minimum and the voltage used was recorded as the rheobase of the muscle. Without moving the pointer, condenser current was switched on and the voltage was increased to double that of the rheobase. Condensers of increasing time values were opened until a contraction was produced. When a contraction of the same strength as that of the rheobase was seen, the condenser discharge time was noted. This time was recorded in sigmas (.001 of a second) as the chronaxie of the muscle. This procedure was used in determining the rheobase and chronaxie of the same muscle on the opposite leg.

General Testing Procedure. All testing on one patient was done in one test period with necessary rest periods allowed. This was done because of the possibility of changes in muscle power over a period of time. The muscles of both legs were tested manually and rechecked. After a thirty-minute rest period the electrical testing was done on the same muscles. The testing area was warmed prior to testing by means of hot packs.

Summation of Data

Manual Gradings. The 224 muscles were distributed in the manual classifications as follows: normal, 75; good, 48; fair, 30; poor, 18; trace, 19; and apparently zero, 34. The normal, good, and fair muscles, those which could function against gravity, totalled 153. The muscles which could not function unless gravity was eliminated totalled 71. Table I shows the distribution of each individual muscle according to grade.

Chronaxie Readings. The chronaxie readings ranged from .1 sigma to 16 sigmas. The muscles which tested "normal" by manual method showed a chronaxie range of .1 sigma to 1.0 sigma. The average sigma reading for the normal muscles was .545 sigma. Muscles which tested "good" manually ranged from .2 sigma to 1.0 sigma, and the average was .667 sigma. The range for the "fair" classification was .3 sigma to 1.0 sigma, and the average was .841 sigma.

The muscles in the "poor" manual classification ranged from 2.0 to 6.0 sigmas, and the average reading was 3.914 sigmas. The range for the "trace" muscles was 4.0 to 16.0 sigmas, and the average reading was 9.085 sigmas. Twenty-nine of the muscles which showed no response manually ranged in chronaxie reading from 6.0 to 16.0 sigmas. It was impossible to get a chronaxie reading for five of these muscles because of the pain caused by higher voltage. The average chronaxie for this classification was 12.528 sigmas. Manual gradings were distributed according to sigma reading. *(See Table II.)* Table III shows the average sigma reading for each individual muscle.

The sigma reading was charted against the manual grade for each muscle to show the relationship which existed. *(See Figures 1 to 7.)*

Discussion, Conclusions, and Summary

Discussion of Findings. The chronaxie readings for normal, good, and fair did not appear to differ significantly. There was considerable overlap in the range of chronaxie reading. Normal muscles gave as short as .1; good, .2; and fair, .3 sigma

TABLE II

DISTRIBUTION OF MANUAL GRADINGS ACCORDING TO CHRONAXIE SIGMA READINGS

Chronaxie Readings	Manual Grades					
	Normal	*Good*	*Fair*	*Poor*	*Trace*	*Apparently Zero*
No Reaction						5
16.0					4	16
8.0					12	13
6.0				6		
4.0				5	3	
3.0				4		
2.0				3		
1.0	2	3	7			
.9	16	16	15			
.6	32	19	7			
.4	21	7	1			
.2	3	3				
.1	1					
TOTAL	75	48	30	18	19	34

for their chronaxie readings. All three grades had readings as high as 1.0 sigma. The fair muscle grade had more high sigma readings than either the good or the normal, and the good grade had more high readings than the normal. *(See Table II.)* When the sigma readings were averaged, the chronaxie for good was higher than for normal muscles and that for fair was higher than the average for good. *(See Table III.)* Thus, where the range did not show a definite chronaxie for each manual muscle grade, the average chronaxie for each grade tended to show that as muscle strength decreased the chronaxie increased. These three manual grades (normal, good, and fair) had a chronaxie of 1.0 sigma or less, which is considered a non-pathological chronaxie reading.

There was a sharp distinction in the chronaxie reading between muscles which function against gravity and muscles which function only when gravity is eliminated. There was also a more

TABLE III

AVERAGE SIGMA READINGS

Muscles	*Normal*	*Good*	*Fair*	*Poor*	*Trace*	*Zero*
Anterior Tibial	.48	.60	.80	6.00	8.00	12.70
Peroneus Longus	.61	.68	.80	2.00	10.00	16.00
Extensor Digitorum Longus	.67	.75	.96	4.00	12.00	13.30
Extensor Hallucis Longus	.53	.70	.90	3.00	10.60	13.30
Lateral Gastrocnemius	.45	.61	.73	5.00	8.00	9.60
Medial Gastrocnemius	.48	.67	.88	5.40	8.00	10.80
Peroneus Brevis	.60	.66	.82	2.00	7.00	12.00
AVERAGE	.545	.667	.841	3.914	9.085	12.528

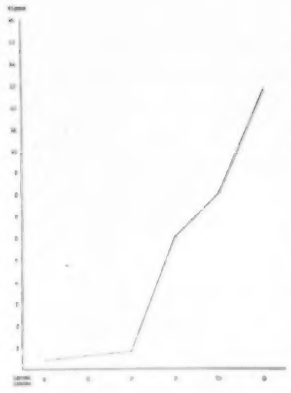

Fig. 1. Anterior Tibial.

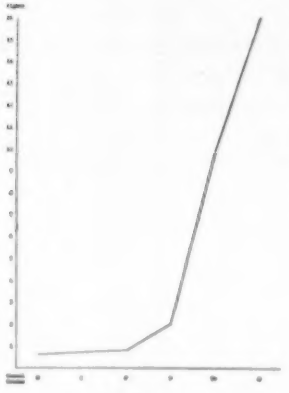

Fig. 2. Peroneus Longus.

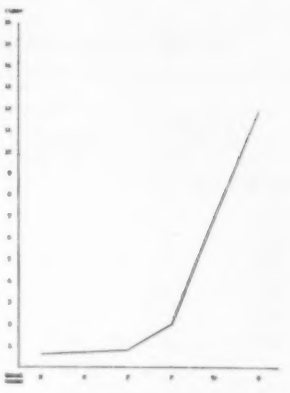

Fig. 3. Peroneus Brevis.

Comparison of Chronaxie Readings and Manual Grades.

marked difference between the individual grades—poor, trace, and zero. This difference was great enough to make it of possible significance for diagnostic purposes. Poor muscles showed as low as 2.0; trace, 4.0; and zero, 8.0 sigmas for their chronaxie readings. There were more high readings in the zero grade than in the trace or poor grades and more high sigma readings in the trace than in the poor classification. *(See Table II.)* In the group of muscles which was unable to function unless gravity was eliminated, as the muscle decreased in strength the range of chronaxie reading increased. The average chronaxie reading for each muscle showed trace to be higher than poor, and zero muscles to have a higher chronaxie than trace muscles. *(See Table III.)* The muscles in this general classification in which gravity had to be eliminated showed a chronaxie reading of more than 1.0 sigma in every case. Muscles with a chronaxie reading of more than 1.0 sigma are considered pathological. In this group, as in the group tested with gravity, a

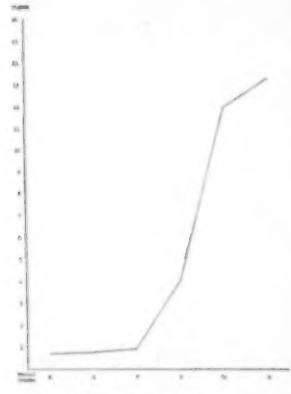

Fig. 4. Extensor Digitorum Longus.

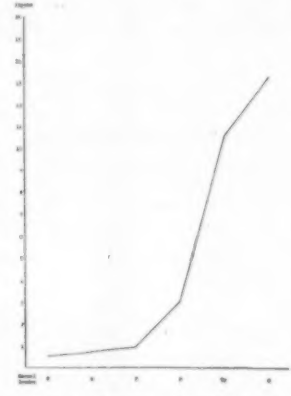

Fig. 5. Extensor Hallucis Longus.

Fig. 6. Medial Head, Gastrocnemius.

Comparison of Chronaxie Readings and Manual Grades.

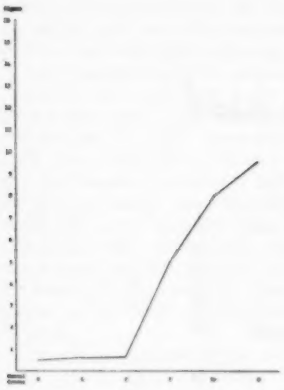

Fig. 7.

Comparison Testing—Lateral Head, Gastrocnemius

definite chronaxie for each manual grade was not shown.

Conclusions. This group of muscles affected by poliomyelitis ranged, by manual testing, from zero to normal, and by chronaxie testing from .1 sigma to 16 sigmas. A definite sigma chronaxie reading was now shown for each manual grade. However, in considering the range of chronaxie readings for each manual grade, the lowest sigma reading increased with decrease in strength as shown by the manual grade (normal range, .1 to 1.0 sigma; good range, .2 to 1.0 sigma; and fair, .3 to 1.0 sigma). The average sigma reading for each manual grade increased as strength decreased.

This study showed that each muscle with normal, good, or fair manual power had a chronaxie of 1.0 sigma or less, and that each muscle of poor, trace, or zero manual power had a chronaxie of more than 1.0 sigma. Thus, it was concluded that muscles affected by poliomyelitis which could work against gravity (normal, good, and fair) showed no pathological change by the chronaxie test. Those muscles which could not function unless gravity was eliminated showed pathological changes by their chronaxie readings. Therefore, muscles which work against gravity can be expected to show a non-pathological chronaxie reading (less than 1.0 sigma). Those muscles which work only if gravity is eliminated can be expected to show a pathological chronaxie (over 1.0 sigma).

Summary. The findings of this study indicated that: 1. A definite relationship exists between the chronaxie readings and the two gross divisions of the manual grades—muscles which function against gravity and those which function only if gravity is eliminated. 2. Muscles testing normal, good, and fair have a chronaxie reading of 1.0 sigma or less. 3. Muscles testing poor, trace, and zero have a chronaxie reading of more than 1.0 sigma. 4. A definite chronaxie cannot be predicted for each manual grade or a manual grade for each sigma reading; a prediction can be made only for the gross divisions. 5. Muscles which show no pathological changes by chronaxie test have varying degrees of strength, but all of these muscles function against gravity. 6. Muscles which show pathological changes by chronaxie test have varying degrees of strength, but all of these muscles function against gravity. 7. Muscles which show no power at all manually respond to the electrical current and in most cases have a high chronaxie reading.

Fuller details of certain parts of this study are available in the thesis of Morris for the degree of Master of Arts at the University of Southern California.

(The author wishes to acknowledge with thanks the assistance of Miss Charlotte W. Anderson, Dr. Eleanor Metheny, and Dr. Irving Rehman.)

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Poliomyelitis in Wytheville and Southwest Virginia

Summer of 1950

Kathryn Wheeler and Clarice Spindle

On a warm night in July, 1950, the baseball game on Wither's Field paused for a moment while the announcer explained the absence of one of the players. The second baseman had taken his little son to Memorial and Crippled Children's Hospital in Roanoke. The town of Wytheville soon learned that little Johnnie had infantile paralysis.

Johnnie was the first polio patient that Wytheville had had for months, but, before the month of July was over, 40 patients had been hospitalized in Roanoke and 37 had returned to their homes for home-care treatment and follow-up. Because of the scarcity of hospital beds and the rapid increase in the number of cases, the physicians in charge of the poliomyelitis wards, the local health departments, and the Bureau of Crippled Children decided to arrange an intensive home-care program. This was done in order that patients might be discharged from the hospital quickly, making room for the new cases.

From the beginning of the epidemic the public health nursing staff and the physical therapist on duty in the Wythe County area concentrated their time and effort upon the care of these patients. As the weeks and months advanced, the patient load increased. At the end of August there were 124 patients in the Wythe area and 97 in the surrounding counties. By November 1st when the figures were highest, there were 153 in the Wythe area and 187 in the surrounding counties.

During this time assistance had come from many sources. The Virginia State Department of Health provided immediate public health nursing and physical therapy service and supervision. Public health nurses from surrounding counties were assigned to the Wytheville area, and physical therapists recruited by the American Physical Therapy Association and financed by the National Foundation for Infantile Paralysis were placed on the State Health Department staff. Necessary equipment for home service was furnished by the local chapter of the National Foundation for Infantile Paralysis. Successful coordination of local, state, and national services was the result of a careful pre-planning program started in Virginia in May, 1949.

The working relationship of the public health nurses and physical therapists was excellent. The home treatment program was considered no impossibility and was accepted cheerfully and without fear. For the past two years, through conferences, institutes, study groups, and daily field experience, the public health nurses had been taught that epidemics of poliomyelitis would probably occur, that they would not be alone in their responsibility, and that physical therapy was an inherent part of the program of service for these patients. The physical therapy treatment program would have been very difficult to administer in a rural area if there had not been this preparedness and understanding of working as a part of the health service.

During the epidemic, each day's work was begun with a conference in which each patient's treatment and progress was discussed. At first, patients were assigned to nurses and physical therapists from a wall chart. However, when the patient load increased, a calendar file became necessary and was used successfully. With the convalescence of the patient, the physical therapist's home visits became more frequent and the nurse spent more time with the new arrivals from the hospital (giving hot packs and instructing the

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mothers in bedside care). The local health office was kept open over the week-ends in order to receive calls, and when necessary the nurses and physical therapists worked seven days a week.

As soon as a child was to be discharged from the hospital, the local health office was notified and the public health nurse made a call at the home. Each child was provided with a separate bed, bed board, foot board, and blocks to keep the mattress away from the foot board. If the family could not provide these, help was given. The local radio station was most generous in broadcasting requests for help, and, if needs were not filled, supplies were purchased by the local chapter of the National Foundation for Infantile Paralysis.

General instructions in the nursing care of the child were given to the mother. As each patient was discharged from the hospital, the family was given written instructions regarding hot packs and bed rest. When the child arrived at home, the nurse made another call and taught the mother the specific care needed. It was found that a series of three ten-minute prone packs given three times a day and followed by prescribed exercises was the most effective.

The physical therapy treatment was determined by the amount and severity of the involvement. The plan of procedure followed that which had been started in the hospital, continuing the accepted pattern of passive motion and muscle re-education. The physical therapist made the first visit accompanied by the nurse. A muscle evaluation was made and a demonstration given the mother, showing just how to do the exercises. Written instructions were left and time was taken to be sure that the mother understood what was meant. An effort was made to use simple language and terms that the parents could understand; to explain how polio had affected the child and what could be expected in the future; and to emphasize the importance of the rest periods. Time spent at this early period paid off in cooperation throughout the home treatment.

After the physical therapist had made several home treatment calls, the mother was asked to give a return demonstration of the exercises, and corrections and suggestions were made. At subsequent visits, additional exercises were given, and the mother was gradually instructed in stretching. It was found that, on the whole, the mothers did not do satisfactory stretching until they were quite adept in carrying on the treatment program.

In order to simplify treatment and minimize travel, the county was divided into districts. The physical therapists spaced their visits according to the patient's and the family's needs, and the number of visits possible in a given time. The patients were then classified into three groups. Group I included the patients who had neither paralysis nor spasm. Group II was those who probably had no paralysis but did have the typical tightness or spasm. Group III was made up of those who had paralysis of any degree or whose unilateral tightness necessitated special attention.

Patients in Group I were seen at weekly intervals for two weeks, then twice a month for two months, then once a month. General active exercises were given, to be done three times a day. All patients returned from the hospital with instructions to remain in bed for four weeks, after which they were allowed to sit up for meals. The following week permission was given to get up for meals, and from then on ambulation was gradually increased. The second month at home a two-hour rest was prescribed morning and afternoon, and for the third month, a one-hour rest period twice a day. A gradual sitting and standing routine was started by the physical therapist at the end of the fourth week, as a part of the exercise period, so that the patient was ready to walk when the time came.

In Group II, the patient was seen twice a week until normal flexibility was attained. General active exercises were also done by this group three times a day, and the same program for gradual ambulation was followed. As soon as possible these patients were reclassified as nonparalytic, or changed into Group III for special attention.

Group III presented the big problem. These patients were seen three times a week until the mother thoroughly understood the exercises. Then, depending on the severity of the case, the visits were reduced to once a week or once in two weeks. Each patient was studied individually and changes made in his treatment and home instructions as progress was made.

Muscle tests were made once a month for the first three months on all patients, and then at two-month intervals for as long as it seemed necessary. Progress records were kept on all patients.

The consulting orthopedists from Roanoke came into the area for bimonthly post-polio clinics for the early convalescent polio patients. This assured a regular and careful check-up of patients and provided directions and guidance for the physical therapists. As the acute situation of the epidemic decreased, the frequency of the clinics was lessened, but the child polio patient will continue to be examined periodically at the regular orthopedic clinics.

Permission to attend school was decided upon

by the orthopedist. As a rule the child was kept at home for three months from the time of his release from the hospital. The first month at school was attended for only half a day and transportation was insisted upon. In cases where the child depended upon the school bus for transportation and it was impossible to return home early, arrangements were made for the child to lie down for an hour at noon recess at school. The Life Saving Corps provided cots and blankets for this purpose. A home-bound teacher was provided for any child whose general condition prevented attendance at school.

This home-bound physical therapy treatment program was based on the principle of teaching someone at home to carry out the instructions until the next visit. It was apparent that there was psychological value in having a parent participate early in the treatment program. With few exceptions there was cooperation, intelligent assistance, and gratitude from the parents. A sense of rejoicing was felt in the homes because the boy or girl could return from the hospital. However, the rapid turnover of patients from the hospital was possible only because of an organized program of follow-up care.

Poliomyelitis in southwest Virginia was not confined to Wytheville and Wythe County. Fifteen other counties in the "Virginia Highlands" shared in the hospital advantages and physical therapy home treatment program. At the close of the epidemic there had been about an equal number of reported cases in the far west and surrounding counties as in the Wytheville area.

The plan for physical therapy follow-up in the future is to be through Physical Therapy Centers. One equipped center and five partly equipped "itinerant" health office centers have been in existence for almost two years. Plans for others had started but had not materialized until the polio epidemic in the summer of 1950.

The largest Physical Therapy Center is located at Wytheville and accepts patients from four counties. At present it is open every day and patients come in for treatment by appointment. Centers in Smyth County, Washington County, and Buchanan County are located in local hospitals. These hospitals give the use of a room, linen, toilet facilities, and chairs. The additional physical therapy equipment consists of treatment tables, mirrors, parallel walking bars and steps, walkers, therapeutic toys, filing cabinets, and records. In the sixteen counties of southwest Virginia there are five "hub" centers and five "itinerant" ones.

This program has been fortunate in having the interest and participation of so many civic groups. The close cooperation of physicians, physical therapists, nurses, and parents provided the necessary continuity in building a practical and progressive follow-up program for the polio patient in his home environment.

In every county, maximum recovery for every patient is the goal.

Beginning June 1, 1951, the specialized program of orthopedic service and physical therapy will be incorporated in the over-all program of public health in the state of Virginia. The physical therapy program, under the direction of the Bureau of Crippled Children, will be extended to every county in the state, according to the need, and as rapidly as physical therapists can be secured. Although program direction comes from the central office of the Bureau of Crippled Children, the physical therapist will work as a member of the local public health staff in each county.

Polio in Pittsburgh

Kathryn L. Kelley

In emergency measures taken during the poliomyelitis epidemic in Pittsburgh last season, the contributions made by local physical therapists were inspired by a larger plan. Realizing the importance of preparedness, Dr. Norris Vaux, Secretary of Health of the Commonwealth of Pennsylvania, called a poliomyelitis planning committee meeting on August 19, 1949. Invited personnel included representatives of such agencies as The National Foundation for Infantile Paralysis, the state medical society, the state hospital association, the state Society for Crippled Children and Adults, the Bureau of Nursing, the state Relations Officers of American Red Cross, and the Western Pennsylvania Chapter of the American Physical Therapy Association. The latter was represented by the author. At that time, and at subsequent meetings during the following winter and spring, the comprehensive hospitalization plan for care of poliomyelitis patients in the Commonwealth of Pennsylvania was formulated. In the spirit of that plan the Western Pennsylvania Chapter set up an emergency unit to assist in treating patients in this particular area, should the need arise. A questionnaire in the form of a postal card was sent to all members to determine the number who were both willing and able to volunteer their services during the evenings, on Saturdays, or on Sundays. We also inquired whether or not they were interested in a refresher course. In answer we received twenty-six positive replies, and we knew that "we were ready."

During the first eight months of 1950—that is, from January through August—there were approximately 70 cases of poliomyelitis admitted to the Municipal Hospital of Pittsburgh for diagnosis and treatment. Since 29 of these cases were admitted in July, and 27 in August, it was believed that 1950 would be a low incidence year. We were happy in our optimistic view that there would be no need to call forth the "poliomyelitis volunteers" of The Western Pennsylvania Chapter.

However, the picture changed rapidly in September. One to ten cases were admitted daily, totaling 115 for the month. Throughout this time, students of the D. T. Watson School of Physiatrics, working in teams of five, had the opportunity to treat these acute poliomyelitis patients as part of their clinical practice under the direct supervision of the hospital's physical therapists and the school's instructors. In this way the increasing load was being handled.

When the student's practice period was completed on September 28, a meeting of the emergency group was called and was attended by 20 physical therapists and the Municipal Hospital Administrator. A plan for continuing treatment was outlined, with weekday evenings from 6:00 to 8:00 P.M., Saturday afternoons, and Sundays from 9:00 A.M. to 4:00 P.M. designated as the schedule. During the meeting a brief refresher course on physical therapy for the poliomyelitis patient was given, with actual demonstrations of physiological movements and muscle reeducation. Doctors' orders were read, and the isolation technic and rules of this particular hospital were explained. It was readily agreed that the volunteers could render more service if the necessity for taking time to read charts before starting treatments could be eliminated. To this end, a simple treatment card system was devised, in which the chief physical therapist listed patient's name, ward location, and nature and extent of involvement. Examples: "Ward F: Mary Brown—lower extremities very stiff," or "Ward G: John White—respiratory, placed on rocking bed today." Such information later proved sufficient to alert the volunteer therapist to the specific needs of the patients. It was emphasized at the meeting that only those physical therapists with considerable experience would be assigned to patients with respiratory involvement. Luckily, over half of the volunteers were familiar with this type of the disease.

The schedule was planned so that two volunteer therapists worked two succeeding evenings during the week, three on Saturday afternoon, and four on Sundays. The hospital itself had one part-time and three full-time physical therapists. In addition to caring for isolation patients requiring extra treatment, the volunteers also helped in the work of a post-isolation unit which was set up for the

(continued on page 302)

Director of Physical Therapy, D. T. Watson School of Physiatrics, Leetsdale, Pa.

Editorials

THE American Physical Therapy Association, through its Polio Recruitment Service, for the third year is assuming the responsibility of recruiting physical therapists for temporary assignments for polio care. If and when the acute polio patient load becomes too great to be handled by the permanent physical therapy staff, a hospital administrator, with the assistance of a National Foundation for Infantile Paralysis representative, may ask for assistance in obtaining the services of qualified physical therapists.

We are hoping that 1951 will not have the serious increases in polio incidence which were evident in 1949 and 1950. At this time the situation is fluid but we realize that polio can be unpredictable. We want to be ready. So we must re-analyze our professional resources. Where are all available physical therapists? When can they be used for highest efficiency on a temporary assignment or permanent placement? Who on the home front, and not available for full time employment, can be used to supplement normal physical therapy services in a facility, to free the permanent physical therapy staff for the polio service? How can we share professional personnel between one facility or agency and another? These questions are being considered by many of our chapters as well as our National Office. More chapters are having representation on State Polio Planning Committees and local Patient Care Committees which will help to anticipate needs and improve service.

A questionnaire has been sent to every qualified physical therapist known to the Polio Recruitment Service, regarding his or her availability for temporary service or assignment on a part-time or full-time basis. New graduates from physical therapy schools are making plans for their first work experience and wish to consider an assignment for polio service under good supervision. As the resources are known, our chapters will be kept informed.

What can you do?

1. Read the new *Procedures for the Recruitment of Physical Therapists for Poliomyelitis Care* in this issue of the *Review*.
2. Return your completed questionnaire as soon as you can clarify your own responsibilities and availability for polio service.
3. Remember the address and telephone number of the Polio Recruitment Service:
   c/o American Physical Therapy Association
   1790 Broadway
   New York 19, N. Y.
   JUdson 6-2932

Five weeks are required to make an address change for the delivery of the PHYSICAL THERAPY REVIEW. Please notify us in advance if you are moving, giving your old and new addresses. This will insure uninterrupted service in the arrival of your journal.

The Greatest Fool May Ask

(This editorial is reprinted from *Occupational Therapy and Rehabilitation*, Vol. 30, No. 2, April 1951, with permission of the editor.)

There are teachers who insert "catch" questions in examinations from which they may derive the questionable pleasure of tormenting anxious students or a feeling of superiority. Good teachers discover better reasons for final examinations: evaluation of their teaching effectiveness and what the student has learned, not what he does not know. The student usually has only one final examination in a subject, the teacher many. The examiner should take advantage of the repeated opportunities to improve his examinations and his teaching.

The people who put the questions should know more than the answers; they should know the objectives of testing. For the undergraduate, the examination should answer these questions: has he learned enough of the fundamentals to take the next course in the subject series; in the senior year, has he learned enough to be granted a diploma? In professional schools, the examination must reveal even more. It must determine not only didactic preparation but the attainment or capacity for exercising the basic skills of the profession. Our remarks will be limited to certifying examinations for physical and occupational therapists.

The physical therapist administers treatment with his hands. Hands turn on switches, set electrodes and lamps, massage, apply bandages; other parts of the body may be used in demonstrations. At least half of what the therapist does for patients is done with body motions yet the qualifying examination is entirely written. The ability to write a good examination paper depends largely on memory retention and facility of expression. A satisfactory candidate may be weak in one or both of these and yet become an excellent therapist. Conversely, bookish people with five thumbs may take honors in the written test and be unsuited for the job of therapist as some early defections from the profession suggest. If the results of a practical examination could be averaged with those of a written test, we would certify fewer misfits and reject fewer potentially good therapists. Physical therapy prescription may be intellectual but its application is physical. A candidate may be able to write about electrodiagnosis and fail to identify the equipment used when shown it.

As for the written examination itself, there are many inequities which some call inconsequential because they are suffered by all alike. Such thinking fails to consider the great variations in training. Some schools have a handful of students who benefit from individual instruction; others are too large for good professional training or too distant from the facilities of large cities. A good school tries to develop good therapists which is quite different from developing ability to pass examinations. Yet institutions are sometimes judged by the number of passes and failures, an immediately available statistic. What relation do such statistics have to what employers think about therapists two years later? We believe that there are many instances of poor correlation between high examination marks and desirable performance; that has been our experience. Physical therapy is a reaction therapy and the most important attribute of the therapist is proper attitude. Can a technical examination determine that? A practical cannot either, but during a practical examination the personality and approach of the therapist will have some impact on the examiner (even in the short space of ten minutes) which will unconsciously be integrated into the final grade.

For the occupational therapist, attitude is also, if not more so, the most important attribute. In addition to proper attitude, a therapist who cannot teach will be ineffective. The qualifying examination for the occupational therapist should include a practical test not of his skill as a craftsman but of his skill in teaching crafts.

A last word on written examinations. They should be about the commonplace, not only because the common things occur commonly, but because the ability to remember minutiae and seldom used words is short lived and not related to practice. A word which is found only in dictionaries should not be found in examination questions. "The greatest fool may ask more than the wisest can answer." Let us stop asking foolish questions.

Neurological Examination

Reprinted from Vol. 145, No. 17 of the Journal of the American Medical Association

Changes in muscle tonus are of great significance in neurological diagnosis, but routine methods currently in use for their determination are somewhat crude and inadequate. Usually the examiner manipulates the patient's extremities and attempts to appraise the resistance encountered. This method often fails to reveal minimal changes and renders simultaneous comparison in the two extremities difficult. Recently Wartenberg* described a more precise and informative test, which he believes deserves adoption as a routine part of every neuro-

*Wartenberg, R.: Neurology 1:18 (Jan.-Feb.) 1951.

logical examination. In this simple test the pendulousness of the freely swinging extremity is used as an index of muscle tonus. While the procedure is described for the lower extremities only, it can be adapted to the upper extremities as well. The patient to be tested is seated on the edge of a table with his legs hanging freely. The examiner lifts the patient's legs simultaneously to the same horizontal level and then releases them, allowing them to swing freely. Two aspects of the motion are noted: its duration and its quality. In the normal person the legs usually swing six or seven times before coming to rest, with the range of successive movement diminishing steadily and evenly. If one leg swings longer than the other, the presence of some abnormality must be assumed. If the difference is slight, several repetitions of the test may be necessary before it becomes apparent. Any voluntary interference on the part of the patient disturbs the characteristic precision and regularity of the movements and can easily be detected. After the swinging time has been determined, the quality of the swing is appraised; the smoothness of the movement and the plane of the swing are studied. Normally the legs swing smoothly in an anteroposterior plane. In disturbances of muscle tonus the movements may be jerky or the foot may move in a diagonal, zigzag or elliptical direction rather than in a straight line.

Diseases characterized by extrapyramidal rigidity, such as paralysis agitans and postencephalitic parkinsonism, produce the most striking disturbance in pendulousness of the legs, namely, a pronounced decrease in the swinging time without obvious qualitative changes. This sign is present early in the diseases mentioned, before the patient complains of symptoms in the extremity and before other simple tests reveal definite abnormality. In spasticity due to pyramidal lesions there is less change in pendulousness than in rigidity due to extrapyramidal lesions. The legs may show all the signs of a pyramidal lesion with little quantitative change in pendulousness except for some increase in the speed of the forward movement and some decrease in the range of the backward movement. Qualitative changes, however, are usually pronounced. The leg does not swing in the anteroposterior plane, and the tip of the foot describes an irregular outline suggesting a flattened ellipse, a broken circle, a spiral or an indefinable figure. Sometimes it is possible to detect spastic hemiparesis on the basis of this test alone. In hypotonia of any origin the swinging time of the affected leg is prolonged. This may occur in lesions of the cerebellum and its connections. If there is a lesion of both the cerebellum and pyramidal system, the cerebellar influence usually predominates and pendulousness is increased. An increase occurs also in any involvement of the lower motor neurone, such as poliomyelitis, progressive spinal atrophy, spinal cord tumor, prolapse of an intervertebral disk, postanesthetic radiculitis in the lumbar region, neuritis of the cauda equina, femoral neuritis, muscular dystrophy and muscular atrophy after knee injury.

Wartenberg emphasizes that pendulousness of the legs should be studied as it occurs after passive elevation of the legs and not after the patellar tendon is tapped to elicit the quadriceps reflex. The motion of the leg following the latter procedure has been called the pendular reflex, but this is a misnomer since pendulousness is a by-product rather than an integral part of the reflex. When the legs are set in motion in this fashion, the swings cannot be compared with precision because it is difficult to tap both patellas with the same force. Moreover the strength of the reflex may be different on each side, or there may be discrepancies between the patellar reflex and muscle tonus. In cerebellar lesions hyperactive reflexes may be associated with hypotonia and in mild pyramidal lesions the patellar reflex may be increased, while muscle tonus and pendulousness are not appreciably altered.

Abnormal pendulousness of the legs may at times be diagnostically decisive; but its chief importance lies in the fact that it alerts the examiner and focuses his attention on possible early organic disturbances, thus leading to further investigation. The test appears to have merit and should certainly be given wider trial.

To the Editor:

On behalf of the National Foundation for Infantile Paralysis and the thousands of American families who support its fight against infantile paralysis, I want to thank the fine men and women in the various branches of the medical profession who served poliomyelitis patients so willingly and competently during 1950, the second highest year of polio incidence in the history of the United States.

The doctors, nurses, physical therapists, nonprofessional and volunteer hospital personnel—all who make up the polio medical team—deserve our warm tribute. They are the ones, in the final analysis, who can give the poliomyelitis patient the thing he seeks: an opportunity to return to his family and to his community a whole person. Through his acute illness and through the long

reeducation and rehabilitation period needed by the severely handicapped, the polio patient needs not only the skill of each member of the medical team, but also their personal interest, the strength of their encouragement, the understanding of his own problem which only they can give him. Unstintingly they have given this service to the poliomyelitis patient.

The American people who support the National Foundation make possible its program of providing financial aid to needy polio patients and of supplementing existing polio facilities and personnel in communities hit by epidemic. We can be successful, however, only in proportion to the cooperation we receive from hospitals and the many and varied personnel needed to serve the polio patient. Without their help we would not have been able to meet the heavy onslaught of polio in these past few years.

The National Foundation for Infantile Paralysis is deeply grateful to all those whose services helped to bring to each poliomyelitis patient his full chance of recovery.

Sincerely yours,

BASIL O'CONNOR, *President*
The National Foundation
for Infantile Paralysis

To the Editor:

In November, 1950, cortisone and ACTH were released from the restrictions of Section 505 of the Pure Food, Drug and Cosmetic Act which governs the sale of experimental drugs. Since then the hormones have been prescribed against a number of diseases, among them various forms of arthritis. The fact that these drugs now are available on a physician's order does not imply an endorsement of their therapeutic value in any given disease. In fact, the clinical usefulness of cortisone and ACTH in rheumatoid arthritis remains to be clarified. Although individual patients on such treatment have experienced great improvement in general well-being, in motility, and have had relief from inflammation of joints, no cures of rheumatoid arthritis due to ACTH or cortisone have been reported. Nor has lasting arrest of the disease been observed in significant numbers of patients.

As with any new method or drug for chronic diseases, the evaluation of ACTH and cortisone as therapeutic agents will require further detailed and extensive study on many patients. After the initial two years of investigative therapy in several research centers, it has become apparent that these hormones control or significantly reduce the activity of rheumatoid arthritis in most patients. Some cases, perhaps 3 percent, do not respond and in a similar number treatment cannot be continued because of untoward effects. Over three-quarters of the patients benefited from therapy soon relapse, sometimes within days after the treatment ceases. This has been true regardless of dosage, schedule, and duration of therapy. The reactivation of rheumatoid arthritis following treatment has been a particularly difficult problem for patients and for all concerned with their care. Therefore, unless the administration of these hormones for an indefinite period is proven practicable, the temporary gains may be outweighed by the hardship of a new adjustment to chronic illness.

To date cortisone and ACTH have not been accepted as standard therapy for rheumatoid arthritis. Except for certain critical phases and complications of this disease such as progressive uveitis and massive pericardial effusion, physician and patient alike must ponder the uncertainty and risks of experimental therapy when the use of these hormones in rheumatoid arthritis is considered. Some of the hazards are known. They include psychiatric disturbances and extensions of the normal physiologic effects of adrenal hormones. In anti-rheumatic doses and with protracted administration they may cause abnormalities of metabolism on a broad scale and of serious degree. Some of the complications of treatment can be controlled sufficiently well so as to permit of its continuation. It is likely that a number of hitherto unrecognized risks will be encountered. The need for vigilant supervision of both hospitalized and ambulatory patients on this experimental treatment should be apparent from one fact alone, that the ordinary diagnostic manifestation of intercurrent infection may be obscured in such patients. Meanwhile, traditional methods of treating rheumatoid arthritis offer a considerable measure of benefit and continue to be important and successful especially in the secondary prevention of crippling deformities.

—HANS WAINE, M.D.
Medical Director, New England Chapter
The Arthritis and Rheumatism Foundation

Polio Pointers for 1951

If Polio Comes

Do allow children to play with friends they have been with right along. Keep them away from new people, especially in the close daily living of a home.

Do wash hands carefully before eating and always after using the toilet—especially important when polio is around. Also keep food clean and covered.

Do watch for signs of sickness, such as headache, fever, sore throat, upset stomach, sore muscles, stiff neck or back, extreme tiredness or nervousness, trouble in breathing or swallowing.

Do put a sick person to bed at once, away from others, and call the doctor. *Quick action may lessen crippling.*

Do telephone your local chapter of the National Foundation for Infantile Paralysis, if you need help. Locate through telephone book or health department. No patient need go without care for lack of money. Your chapter will pay what you cannot afford.

Do remember—at least half of all polio patients get well without any crippling.

If Polio Comes

Don't get over-tired by hard play, exercise, work, or travel. This means men, women, or children.

Don't get chilled. Don't bathe or swim long in cold water, or sit around in wet clothes.

Don't have mouth or throat operations during a polio outbreak.

Don't use another person's towels, dishes, tableware, or the like.

Don't take children to places where there is polio. Ask your health department.

Don't take your child out of camp or playground, where there is good health supervision.

(Reprinted from the *National Foundation News*, April 1951.)

Procedures for the Recruitment of Physical Therapists for Poliomyelitis Care

Adopted by the American Physical Therapy Association (APTA) and the National Foundation for Infantile Paralysis (NFIP) on May 1, 1951, for recruitment within the United States

The NFIP and APTA desire to assist in seeing that all of the hospital's polio patients receive adequate physical therapy service. However, every effort must be made to assure the most effective use of physical therapy personnel. Consultant service will be made available by APTA. (These procedures cover service to agencies as well as to hospitals. Wherever the word "hospital" is used, the word "agency" may be substituted.)

Recruitment service for physical therapists for temporary work with polio patients will be given by the APTA upon the written request of the administrator of the hospital and approval by the NFIP state representative.

This recruitment service is available in times of emergency caused by the incidence of acute and immediate post-acute patients and is not a service applicable to long-term or convalescent type patients.

I. Recruitment

A. The need for temporary assignment of physical therapists must be determined by the hospital administrator in consultation with the NFIP state representative.

B. The hospital desiring to employ physical therapists will be expected first to utilize available or transferable personnel within the community.

C. If the staff cannot be augmented as described, the administrator of the hospital may submit the application form, PRS-2, to the NFIP state representative for approval. This will then be forwarded to the APTA, Polio Recruitment Service, 1790 Broadway, New York 19, N. Y. Copies of this form may be secured from the state representative or the APTA.

D. All requests under "C" will be given consideration but, before a physical therapist is recruited, the hospital requesting assistance will be

expected to supply written evidence of the need. The APTA, to assure an equitable distribution of personnel throughout the country, will evaluate evidence submitted and other data available to them. This, it is recognized, may then result in delay or denial of some requests because of the problem of supply and demand to be met.

II. Qualifications

A. Physical therapists with one or more of the following qualifications will be referred to temporary positions:

1. A graduate of a physical therapy school approved by the Council on Medical Education and Hospitals of the American Medical Association.
2. A member of the APTA.
3. A senior member of the American Registry of Physical Therapists (ARPT).

III. Employment and Personnel Policies

A. Physical therapists recruited by the APTA are employees of the hospital to which they are assigned. NEITHER THE NATIONAL FOUNDATION NOR THE AMERICAN PHYSICAL THERAPY ASSOCIATION IS THE EMPLOYER OF THESE PHYSICAL THERAPISTS.

As the employer, it will be the responsibility of the hospital to orient the physical therapists to the hospital program.

Since these physical therapists will be employed by the hospital, it is expected that the privileges of sick leave and state workmen's compensation, if extended to the professional staff employed regularly by that institution, will be extended to recruited physical therapists.

Recruited physical therapists are considered temporary employees and are not entitled to vacations with pay.

B. *Length of temporary service:*

Physical therapists recruited from outside the assignment community agree to serve for a minimum period of three months, though they may be released at an earlier date if no longer needed.

Requests for extension of the temporary assignment period must be supported by written evidence of continuing need. This data must be filed with the NFIP state representative for approval and forwarded to the APTA for evaluation and possible extension of the assignment. The application form need not be used.

The total period of temporary service may not exceed six months.

NOTE: The NFIP will not underwrite the cost of return transportation unless an official extension has been granted.

C. *Hours of work:*

The physical therapist shall work the regular institutional hours of the hospital to which he or she is assigned. Not less than forty hours and not more than forty-eight hours of duty per week is considered a reasonable work week.

D. *Salaries:*

Salaries given below have been determined by NFIP in consultation with APTA:

1. $240.00 per month to new graduates who are accepting emergency polio assignments during their first year after graduation.
2. $260.00 per month to experienced physical therapists.
3. $285.00 per month to supervising physical therapists.
4. Physical therapists recruited locally for part-time work may be paid a prorated salary, based on the above classifications.

Payment of salary shall be made by the hospital in accordance with the regular pay period for professional staff in that hospital. The physical therapist's salary shall start at the time of reporting for duty, but, in any event, not later than twenty-four hours after reporting his or her arrival to the hospital.

Physical therapists recruited for a three-month period, who are released by the hospital prior to the completion of assignment, shall receive one week's notice or one week's salary. However, physical therapists leaving assignments of their own accord, prior to completion of three months' service, shall be paid through the last day of service.

The hospital shall pay the salaries of the additional physical therapists needed to furnish the amount of physical therapy included in the hospital's per day cost up to the institutional rate. The cost of physical therapy service in excess of the amount included in the hospital per day cost will be reimbursed to the hospital by NFIP chapters if the hospital cannot underwrite any part of these additional costs.

NFIP chapters will not reimburse hospitals for any portion of physical therapists' salaries unless physical therapists have been processed through the application and assignment procedure, as outlined herein.

NFIP chapters should not pay for outpatient treatment given by physical therapists for whom the NFIP is underwriting the salaries.

E. *Withholding tax, social security and insurance:*

Hospitals have a legal responsibility to withhold federal income tax on salary and maintenance of recruited physical therapists, as for other hospital employees, and to report to the government

the full amount of wages (including salary and maintenance) and tax withheld, according to government regulations.

At the termination of employment of recruited physical therapists, the hospital should furnish withholding tax statements.

Social security coverage is subject to the policy in practice in the hospital, and government regulations. Any questions regarding social security should be referred to the hospital administration.

The NFIP has insurance coverage for recruited physical therapists who contract polio. This insurance covers medical and hospital expenses, within limits, as well as a weekly indemnity for a specified period.

The hospital is expected to notify NFIP at 120 Broadway, New York City, upon the admission and diagnosis of poliomyelitis of any such personnel.

F. *Maintenance:*

1. Physical therapists recruited outside the community should receive maintenance to include lodging, meals, and laundry of uniforms at the hospital, if at all possible.

   The NFIP chapters are authorized to reimburse the hospital for the actual cost of such maintenance, but not to exceed $75.00 per month.

2. When maintenance is not available at the hospital to physical therapists recruited outside the community, an allowance of $75.00 per month to be applied toward maintenance will be paid to each physical therapist by the hospital as partial compensation for living away from home.

   NFIP chapters are authorized to reimburse the hospital for this monthly maintenance allowance.

   In cases where living accommodations for physical therapists are not available in the hospital, accommodations in the community should be arranged for them in advance by the NFIP local chapter, or the hospital.

3. In those instances where lodging is available at the hospital but the physical therapist chooses to live outside, it may be done provided the physical therapist assumes the responsibility of finding the accommodations. The physical therapist will be paid a $75.00 per month stipend by the hospital, minus the cost of any meals or laundry furnished by the hospital.

   NFIP chapters are authorized to reimburse the hospital for this monthly maintenance allowance.

4. Physical therapists recruited to serve in their own communities by the APTA, or one of its component chapters, will pay for any meals or laundry received at the hospital, unless the hospital wishes to furnish such services without charge.

IV. Supervision

A. *Medical:*

All physical therapy must be prescribed by a physician. No physical therapist will be recruited unless medical direction is assured.

B. *Physical Therapy:*

Recent graduates or physical therapists with no experience in the care of polio patients will be referred only to facilities where qualified physical therapy supervision is available.

If the hospital cannot provide a qualified physical therapy supervisor, the APTA will assist in obtaining a physical therapist with supervisory experience and ability.

Qualified physical therapists may not work under the supervision of an unqualified physical therapist.

V. Travel Expense

A. Travel expense from place of recruitment to place of assignment will be paid by the APTA. Return travel expense to place of recruitment or equitable amount applying to other location will be paid unless the physical therapist—

1. Leaves of own accord prior to termination date of assignment.
2. Leaves assignment for vacation, holiday, or any unauthorized leave.
3. Remains beyond termination date of assignment without authorization of the APTA.

B. Such travel expense is to include: Cost of plane, bus, or train (including pullman) accommodations, plus an allowance of $10.00 per day (24 hours) while traveling, in lieu of salary and expenses such as meals en route, taxis, tips, baggage costs, and purchase of travel insurance by the physical therapist. In addition, the cost of lodging, if necessary, between planes, buses, or trains, not to exceed $5 per day, will be allowed.

C. If physical therapists travel to their assignments by car, the APTA will pay expenses at the rate of 7c per mile. (This should not exceed expenses for travel by plane or train, whichever is greater.) When traveling by car, the allowance of $10.00 per day will be allowed only for the same number of days necessary to reach destination by train. Expenses for additional time, because of preference of travel, are to be absorbed by the physical therapists.

D. Travel expense, as outlined above, shall be reimbursed by NFIP headquarters office to APTA.

Facts About NFIP

(The National Foundation for Infantile Paralysis finances a very large portion of the hospital and medical care for poliomyelitis patients throughout the United States. It seems appropriate, therefore, in the Polio Issue of the *Review* to provide physical therapists with some background information as to the entire program of the National Foundation.)

The National Foundation for Infantile Paralysis was organized in 1938 to lead, direct, and unify the fight against poliomyelitis. As originally conceived, its funds were to be spent solely for research to find a preventive and cure for polio. Within a short time, however, it became clear that the majority of people who contracted polio needed better care and that financial assistance would have to be provided many of them to make this possible. In 1941, therefore, the National Foundation undertook to organize local units of the national organization to see that good care and financial assistance was made available to all patients in need. Since that time, the National Foundation for Infantile Paralysis has directly assisted about 165,000 patients.

The National Foundation consists of two parts —the headquarters staff at 120 Broadway, New York City, and approximately 2,800 chapters covering every county in the United States.

National Headquarters has a three-fold program—research, professional education, and epidemic aid. Fifty percent of the net receipts of the "March of Dimes" Drive (held each January) is sent to National Headquarters to finance its program. Over twenty-five million dollars of "March of Dimes" funds have already been spent in research and professional education. The primary goals of research are: first, to eradicate the disease by discovery of a preventive; second, to promote improvements in technics of care to minimize the crippling after-effects. The professional education program provides fellowships and scholarships to qualified persons to receive specialized training to carry on scientific research and give care to patients. Approximately 1,600 physical therapists have now been assisted under this scholarship program.

Epidemic Aid Funds of National Headquarters of the National Foundation for Infantile Paralysis are used to:

1. Provide supplementary funds to chapters to continue their patient care programs, when they have exhausted their own treasuries. Such advances to chapters from National Headquarters during the past five years have amounted to $35,277,299.25.
2. Pay transportation expenses for recruited nurses and physical therapists.
3. Underwrite compensation, travel (and maintenance, where necessary) for orthopedic and pediatric resident physicians.
4. Provide grants to state or local health departments to support salaries of professional personnel engaged in providing services in the care of polio patients.
5. Establish and maintain special equipment pools in strategic areas to provide respirators, hot pack machines, etc., required for polio care in epidemic emergencies, to every part of the nation.
6. Provide polio epidemic aid teams from four medical teaching centers which are available at any time for service in epidemic areas, at the request of the local health officer and medical society, to work with local medical and hospital groups in setting up polio wards and instructing professional personnel in specialized polio care.

Costs of these services are borne entirely by funds collected during the "March of Dimes."

The Chapter Program consists of helping to finance medical treatment and care for poliomyelitis patients who cannot bear full costs themselves, and working with local health, hospital, and medical authorities in improving facilities and quality of care. To carry on this patient care program, fifty percent of the money contributed during the "March of Dimes" remains in the chapter to be used for assistance to local patients and, in emergencies, to supplement the national epidemic aid fund. With the exception of a few paid executive secretaries in large metropolitan area chapters, National Foundation chapters are manned by volunteers.

There are sixty-seven National Foundation State Representatives acting as liaison agents between National Headquarters and chapters. In a few instances, one representative serves several states, while in the larger or more populous states, there may be several representatives assigned to one state. Six regional directors, with offices at National Headquarters, serve as liaison between the state representatives and National Headquarters.

While chapters must function within the framework of policy set down by the national Board of Trustees, they are, to a large extent, autonomous. Chapter procedures vary somewhat across the country, conditioned usually by local differences and circumstances.

National Foundation's chapters and state representatives work with community agencies and medical groups to improve existing facilities in every community so that comprehensive care might be available to all people who contract poliomyelitis. No funds are spent to build polio hospitals. Until a few years ago, many hospitals throughout the country were reluctant to accept polio patients. Through a broad program of education, many general hospitals are now accepting acute poliomyelitis patients as the epidemic need arises.

National Foundation chapters have assisted many hospitals in developing isolation wards, and orthopedic and physical therapy departments, and otherwise have improved their ability to provide good care. In the past, a considerable amount of money was spent by chapters on equipment needed by hospitals. However, because of the serious financial drain on the National Foundation during the past five years of extraordinarily high incidence, chapters have had to curtail equipment expenditures to essential items for care, only, and conserve their funds for direct assistance to patients who need and cannot pay in full for care.

Chapters assisting patients with their hospitalization expenses reimburse hospitals at an all-inclusive rate not to exceed a hospital's average cost per diem. This all-inclusive per day cost includes average service (nursing, physical therapy, laboratory, etc.) for every polio patient. In addition to reimbursing hospitals for their per day cost for polio patients who need assistance, chapters, during times of high polio incidence in a community when the patient load is greater than can be serviced by the hospital's normal staff, may reimburse the hospital in whole or in part for the salaries of recruited nurses or recruited physical therapists. Specific arrangements as to what portion of the expense of additional personnel will be underwritten by the chapter are made with hospitals in advance of the epidemic season.

Physical therapists needed in emergency times are recruited by the American Physical Therapy Association. Nurses are recruited by the local chapters of the American Red Cross. "Procedures," under which nurses and physical therapists are recruited, are formulated at national level between the National Foundation for Infantile Paralysis and the American National Red Cross and the American Physical Therapy Association. Under these Procedures, nurses and physical therapists so recruited become employees of the hospital to which they are assigned. They are governed by rules and regulations set down by the hospital administration.

While the National Foundation assists patients to secure the best quality of care available in a community, it takes no part in hospital administration and is not responsible for details of patient care. Chapters and national headquarters to a great extent have worked with hospitals in suggesting improvements in quality of polio care administered in the hospital, but the actual program is the hospital's responsibility.

The American people have contributed most generously to the "March of Dimes" to make sure that no polio patients would go without adequate care for lack of funds. Families are not expected to alter their standards of living to the point of hardship to pay for polio care, but, when funds are available in the family through insurance coverage or other sources, they are used before the National Foundation funds. In most instances, families wish to underwrite expenses to the extent of their ability.

In a program as extensive as the National Foundation's, conducted through the generosity of volunteers, it is understandable that there will be variance in the application of policy. Policy is set at National Headquarters and sent to state representatives and chapters with the request that it be implemented wherever possible. Existing conditions in communities, however, vary to such a degree that it is sometimes necessary to modify a policy before it can be implemented in a specific area.

Polio patients, like other patients, are the responsibility of the medical community in which they live. National Foundation chapters help individual patients and assist hospitals to provide good care wherever possible, but the responsibility for hospitals and professional personnel is primarily that of the community concerned.

Bound Symposium Available

The Symposium on Physiology (Physiology of the Heart and Circulation and Its Clinical Application in Physical Medicine), which was printed in the November and December issues of the REVIEW, is now available in bound, booklet form, price: $1.00 per copy. Copies may be ordered from the American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

The Polio Post

The "Polio Post" is a news bulletin published periodically for professional personnel by the National Foundation for Infantile Paralysis. The latest issue, published in April 1951, contains pertinent information for all who are concerned with the problems of epidemic poliomyelitis and its aftermath. The items listed in this issue clarify policies and point up current activities in four pages of concise and informative topics, viz.:

"Communities Plan to Combat Personnel Shortages"

"Respirator Patients Have Moving Day"

"Early Hospital Discharge Preferred for Polios"

"Guide Offers Plans for Economic Pool Construction"

"Polio Symposium Reprints Available"

"State Polio Planning Committees Gear for Action"

"Body Mechanics Improve Nursing Care"

"Houston Conference Studies Respiratory Problems"

"Training Centers Offering Short Courses in the Treatment of Poliomyelitis Patients for Physicians and Nurses"

Bibliography on Polio Patient Care

American Journal of Nursing

McCluskey, Audrey M., R.N., "The Patient in a Respirator." April 1951, p. 260.

Archives of Physical Medicine

Bennett, Robert L., M.D., "Head Traction Attached to Corset in Care of Scoliosis." February 1951, p. 84.

Britt and Bennett, "Care of After-effects of Poliomyelitis, Forearm and Hand." October 1950, p. 646.

Dail, Austin, Huddleston, Bower, and Grosse, "Transfer of Respirator Patients." September 1950.

Gucker, Thomas, "Care of After Effects of Poliomyelitis on the Hip, Thigh, and Trunk." May 1950.

Gullickson, Olson, and Kottke, "The Effect of Paralysis of One Lower Extremity on Bone Growth." June 1950, pp. 392-400.

Hansson, Kristian G., "Care of Upper Extremity Paralysis in Poliomyelitis." June 1950, pp. 387-391.

Schram and Bennett, "Underwater Resistance Exercises." April 1951, pp. 222-226.

Hospitals

Special Section on Poliomyelitis. March 1951, pp. 38-60.

(Reprints of the articles from this section may be obtained without charge from the national office of the National Foundation for Infantile Paralysis.)

Institute of Physical Medicine and Rehabilitation

"Self-Help Devices for Rehabilitation"

Journal of the American Medical Association

Bennett, Robert L., M.D., "Care of Children Convalescing from Poliomyelitis." September 30, 1950, p. 377.

Recruitment Poster

This very attractive blue-and-gold poster is now available for distribution. The size is 8 x 10 inches, suitable for bulletin boards. Supplies will be mailed to chapters, and to members on request. Let's get it up in schools, libraries, Y.W.C.A.'s, and as many other places as possible.

Reprints Available

Informational brochures may be obtained without charge. A small charge is made for the scientific reprints, as indicated. (Members of the Association, students enrolled in approved schools of physical therapy, and libraries may have one free copy of each scientific reprint, except the Functional Issue and the Physiology Symposium, but must pay the indicated price for additional copies.) All requests should be addressed to: American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

PHYSICAL THERAPY—An illustrated brochure, describing the opportunities for a career in physical therapy, with suggestions for prospective students and a list of schools approved for physical therapy training.

OUR ASSOCIATION—An informational booklet on the activities, scope, and services of the American Physical Therapy Association.

SUGGESTIONS FOR PROSPECTIVE STUDENTS—Outlines the professional course of study for college students preparing for physical therapy.

CODE OF ETHICS—Ethics for the physical therapist of the American Physical Therapy Association.

ESSENTIALS OF PROFESSIONAL ETHICS IN PHYSICAL THERAPY—*Mary E. Haskell*

PERSONNEL POLICIES FOR QUALIFIED PHYSICAL THERAPISTS—Suggestions as to salary, hours, vacations, etc., by the American Physical Therapy Association.

APPROVED SCHOOLS OF PHYSICAL THERAPY—A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

QUESTIONS AND ANSWERS—A concise outline describing physical therapy education and application.

EDUCATIONAL OPPORTUNITIES FOR PHYSICAL THERAPISTS—A list of postgraduate programs offered by the approved schools and a list of specialized courses for physical therapists.

PHYSICAL THERAPY EMPLOYMENT OPPORTUNITIES.

UNDERLYING MECHANISMS IN SYMPTOMS OF POLIOMYELITIS: THEIR BEARING UPON TREATMENT—*Thomas Gucker, III, M.D.*

THE PHYSICAL THERAPY DEPARTMENT FROM AN ADMINISTRATOR'S VIEWPOINT—*Joseph P. Peters.*

THE DROP PACK FOR MOIST HEAT—*Adeline E. Doing*

HOME CARE PROGRAM FOR POLIOMYELITIS PATIENTS—*Emil D. W. Hauser, M.D., Antoinette Rajek, and Louise Reinecke*

DAILY ACTIVITY INVENTORIES OF CEREBRAL PALSIED CHILDREN IN EXPERIMENTAL CLASSES—*Mary Eleanor Brown*

PHYSICAL THERAPY IN STATE CRIPPLED CHILDREN'S PROGRAMS—*Mildred J. Allgire*

THE ROLE OF THE PHYSICAL THERAPIST IN THE TOTAL CARE OF THE CHILD—*Julius B. Richmond, M.D.*

POSTURE TRAINING FOR ADOLESCENTS—*Carolyn Bowen* (5c)

PHYSICAL THERAPY IN THE PRENATAL PROGRAM—*Gillian Griffith Smith, B.S.* (5c)

METHODS OF CLINICAL INSTRUCTION IN PHYSICAL THERAPY—*Beatrice E. Whitcomb, Capt., WMSC*

FUNCTIONAL TRAINING—*Edith Buckwald* (10c)

ADMINISTRATION OF A COMMUNITY REHABILITATION CENTER—*Hazel E. Purscott* (10c)

WHEEL CHAIRS—*George G. Deaver, M.D.* (5c)

REHABILITATION OF THE HEMIPLEGIC PATIENT—*Donald A Covalt, M.D.* (5c)

PATIENT INSTRUCTION—*Margery L. Wagner* (5c)

PHYSICAL THERAPY HOME CARE PLAN, ORANGE COUNTY (CALIFORNIA) HEALTH DEPARTMENT (5c)

MEASUREMENT OF JOINT MOTION, PARTS 1, 2, AND 3—*Margaret Lee Moore* (25c)

TOYS, GAMES, AND APPARATUS FOR CHILDREN WITH CEREBRAL PALSY—*Gladys G. Rogers and Leah Thomas* (10c)

ROLE OF PHYSICAL THERAPY IN CARE OF PSYCHIATRIC PATIENTS—*Lola E. Smith* (5c)

SPECIAL FUNCTIONAL ISSUE of the *Review* (November 1949)—Contains eight articles by leading physicians and physical therapists on functional training, crutch walking, and wheel chairs. There are twenty-six abstracts of articles on functional training from current medical journals. (50c)

PHYSIOLOGY OF THE HEART AND CIRCULATION AND ITS CLINICAL APPLICATION IN PHYSICAL MEDICINE—A bound edition of the papers presented in a symposium at the 1950 annual conference of the American Physical Therapy Association. (*Harry D. Boumán, M.D.*, Coordinator) ($1.00)

Association Activities

The Director Reports:

This issue of the *Review* is really a "polio" issue. Each year the July issue is set aside for information about polio—recruitment service, articles on treatment, reference material—to help us give better service during the season of highest incidence. There is a very fine letter of appreciation from Mr. O'Connor, President of the National Foundation, addressed to all who have given service to polio patients this past year. I feel that we, the Association and the 1600 physical therapists who have received scholarships in the past five years, should express our deep appreciation to Mr. O'Connor and the Foundation. This can best be expressed through continued service and loyalty to the profession and to the patient.

There will be fewer p.t.'s available this year for acute polio care, for the needs of the Armed Forces must be met. This means careful planning of treatment schedules, with priorities in mind; careful home instruction so that patients may be discharged from the hospital without jeopardizing their recovery; good use of aides or volunteers to free you for professional work; cooperative planning with medical social workers, nurses, occupational therapists, and welfare workers, in order that all may work efficiently, since there are shortages in these fields also.

All physical therapists needing recruited personnel must be realistic about their needs. We appreciate that heavy case loads are not desirable. However, when there are not enough to go around, one must not ask for more than minimum needs or a fellow worker in another part of the country will have to do without and patient care in that area will suffer.

Physical therapists may have to interpret these facts to physicians and hospital administrators. We suggest that you read carefully, if you have not already done so, "Physical Therapy in the Home; Standing Orders and Priority Listings" by Dr. Arthur L. Watkins, with a discussion by Mary Macdonald, which appeared in the June issue. Reprints of this are available without charge should you wish to give them to any of your professional co-workers.

We are hoping for a decreased incidence of polio this year. But should that not be the case, we know that patients will receive the best of care through more careful and cooperative planning.

—MILDRED ELSON, *Executive Director*

Physical Therapists Needed

The number of physical therapists needed for the Women's Medical Specialist Corps is still great. Just about one fourth of the estimated needs has been met by the involuntary recalls and volunteers!

New graduates and those who have graduated since World War II are urged seriously to consider volunteering. In Korea boys are being wounded, just as they were in World War II. Peripheral nerve injuries need p.t.; amputees and paraplegics need p.t.; those with chest injuries need p.t.

Please refer to your March *Review* for information about requirements. If you have any questions write your National Office.

School News

Large additions to Wisconsin General Hospital mean a new clinical department for the Section of Physical Medicine at the **University of Wisconsin** Medical School. The new department will be on the first floor of the north wing. Moving day is expected to be some time in August.

Floy Pinkerton, Director of Training Courses in Physical Therapy at **Columbia University,** has received an appointment as Assistant Professor of Physical Therapy.

Chapter Activities

The April meeting of the *Southern California* chapter included discussion groups, each led by a member. Each member had the opportunity to participate actively in consideration of two of the following topics:

a. Breathing patterns seen in poliomyelitis and testing of the respiratory muscles
b. Muscle testing in infants
c. Peripheral nerve injuries
d. Physical therapy in a doctor's office
e. Prosthetic problems with the upper extremity amputees
f. A functional activities program for children
g. Factors and problems of balance in the cerebral palsied

Membership News

Marriages

Joan Seiver, now Mrs. Joan S. Cowan of Scottsbluff, Nebr.

Helen Lutz, now Mrs. Helen L. Johnson of Fitchburg, Mass.

Ellen Jane Wynn, now Mrs. Ellen W. Lesh, York, Pa.

Elizabeth L. Wood to Donald P. Bickel, April 14th, Wilmington, Del.

Jeanne M. Flickinger of West Reading, Pa., to Herman D. Person, Peoria, Ill.

Ruth Van Stensel to Peter James Wieland, April 6th, Grand Rapids, Mich.

Margaret Ann Boesen to William Evanko, Albuquerque, N. M.

Leona B. Schwant to Wallace L. Millard, Memphis, Tenn.

Evelyn Ganson, now Mrs. Evelyn McDougall, Mill Valley, Calif.

Edith B. Wander of Seattle, Wash., now Mrs. Edith W. Palmer, Kirkwood, Mo.

Priscilla Colvin, now Mrs. Priscilla C. Nielsen of Los Angeles.

Ruth V. Champe of Shelton, Conn., now Mrs. Ruth C. Milanick, Cleveland.

Margery Irwin, now Mrs. Margery I. Surbaugh, Des Moines.

Mrs. Martha J. Schulenberg of Akron, now Mrs. Martha S. Dunbrook, Oxford, Ohio.

Florence Salmon, now Mrs. Florence S. Pepin, Buffalo, N. Y.

Margaret J. Dolph of Cornwall-on-Hudson, N. Y., now Lt. Margaret D. Thompson, WMSC, Fort Lewis, Wash.

Winnifred J. Roby, now Mrs. Winnifred R. Becker, Portland, Ore.

Patricia Lou Norcross, now Mrs. Patricia N. Futera, Denver, Colo.

Georgiana Windham of Forreston to E. E. Johnson of Dallas, Texas.

1st Lt. Anne M. Bowers, now 1st Lt. Anne Callowhill, Camp Polk, La.

Audrey J. Scott to James Kissler, Modesto, Calif.

June Ellen Breen of Santa Monica, now Mrs. June Ellen Schwartzmann, Beverly Hills, Calif.

Madge A. Green, Seattle, to Stuart Rogers of Bellevue, Wash.

Margot G. Cruse of Los Angeles, now Mrs. Margot C. Prieto, Santiago, Chile.

Marilyn Rote-Rosen of Granville to Manning Cohen, Glens Falls, N. Y.

Charlotte Fishbain, now Mrs. Charlotte F. Baum of Cincinnati.

Mrs. Daisy H. Houpt, now Mrs. Daisy H. Gunby of Cleveland.

Betty Lou Petska of Dickinson, N. D., now Mrs. Betty Lou Gerholz, Minneapolis.

Laura M. Matteson, now Mrs. Laura M. Burkholder, Bartow, Fla.

Helen W. Riederer of New Rochelle to Alfred Musal of Binghamton, N. Y.

New Student Members

Columbia University

Barbara M. Anderson — Joyce Jeffrey

Duke University

Roy A. Gilchrist

St. Louis University

Martha A. Gross — Marilyn Kisling
Esther M. Haravitch — Wallace S. Strittmatter

University of Colorado

August G. Weichmann

University of Texas

Stanford E. Murray

Federal Legislation

The following statements regarding the bills introduced in Congress to commission male physical therapists were received on May 7, 1951, in reply to letters asking for status of the bills.

"Thank you for your letter of April 30th regarding H.R. 911, my bill to commission male nurses and others in the professional categories.

"At the present moment there is nothing scheduled by the House Committee on Armed Services, but I am hopeful that some action will be taken in the near future so that the many hundreds of professional men now on active duty with the armed forces may take their rightful places with the privileges and status now enjoyed by women nurses."

Frances P. Bolton

"I have your communication of the 30th, inquiring as to the status of S. 661, introduced by me, and I would advise that at present no hearings have been scheduled with respect to this bill.

"No doubt you are aware that both the Senate Foreign Relations Committee and the Senate Armed Services Committee are presently conducting executive sessions on the Korean situation, and until such time as those hearings are out of the way, I do not believe any hearings are possible."

Irving M. Ives

Jean Humes, member since 1946, passed away on April 9, 1951, following a long illness.

George Kroupsky, New York University, 1944, passed away some months ago.

Capt. Elizabeth Wiggins, U. S. Air Force Reserve, has volunteered for active duty in the Women's Medical Specialist Corps and been assigned to physical therapy duty at Sampson Air Force Base, N. Y. Before returning to active duty, Captain Wiggins was employed as a physical therapist at the Veterans Administration in Omaha, Nebraska.

Adeline H. B. Mills of Stone Harbor, Cape May County, N. J., has been appointed a first lieutenant in the USAFR. Before accepting her WMSC appointment, Lieutenant Mills was employed at the D. T. Watson School of Physical Therapy at Leetsdale, Pa. Upon completion of her indoctrination, she will be assigned to PT duty at Keesler Air Force Base, Mississippi.

Annual dues were payable on May 1st. Your prompt response will be appreciated.

May we also call to your attention that according to the Bylaws "any active member not actively employed in physical therapy may, on application to the Executive Committee and on approval thereof by the Committee, be made an inactive member."

General News

NLNE Publishes Handbook

The National League of Nursing Education has published a handbook entitled "The Contribution of Physical Therapy to Nursing Education."

This teaching aid provides valuable material relative to methods, knowledges, and skills in the application of the principles of body mechanics in nursing. The nurse instructor and the physical therapist, working as a team, assume the responsibility essential in the development of a teaching program which will provide an understanding of body mechanics and its integration in all areas of nursing.

The book is intended to be a guide for instructors and presents resource materials in the following areas: student health, biological and physical sciences, nursing arts, medical and surgical nursing, maternal and child care, and psychiatric nursing.

Copies of the handbook may be obtained from the National League of Nursing Education, 2 Park Avenue, New York 16, N. Y., at 75 cents each.

Health Resources Advisory Committee

The Health Resources Advisory Committee, of which Dr. Howard A. Rusk is chairman, is now affiliated with the Office of Defense Mobilization instead of the National Security Resources Board. The official announcement of the transfer was made by Office of Defense Mobilization Director Charles E. Wilson, who said, "This important group has a vital contribution to make to the overall mobilization effort. Defense mobilization is not just production and economic stabilization, but rather it is the people who make production and stabilization possible, and primarily it is the welfare of the people as a whole and the part they are playing and must play to make America strong."

The eight-man Health Resources Advisory Committee will continue in its advisory capacity to Selective Service on administration of the doctor draft law and determining call-up availability of Reserves.

World Health Organization

The Health of All Peoples Is Fundamental to the Attainment of Peace and Security

Brock Chisholm, M.D., Director-General, World Health Organization, wrote the following statement highlighting the observance of World Health Day:

"If in our ignorance, our short-sightedness, our lack of courage and vision, we continue to deny our children the blessings of physical well-being; if, moreover, we continue to inculcate in them prejudices, uncritical and emotional beliefs in unreasonable things, excessive fear of others, and, as a result, aggressive desire for power and domination, then we can be sure that the world of tomorrow will be a world of fear, of chaos, of cruelty, and of death.

"If, on the other hand, we succeed not only in making our children physically healthy but also in freeing them of our taboos, our anxieties, our destructive impulses; if we teach them to feel, and to act in accord with, a sense of responsibility for the welfare of their fellow human beings—not just locally, not just nationally, but for the whole human race; if, in other words, we help them towards real maturity, then we need not worry about our future and theirs: it cannot but be secure, peaceful, and truly rich in the values that make life worth while.

"To resolve on this April 7th to dedicate our energies to the healthy development of our children will be to provide ourselves and them with one of the strongest possible guarantees that Man's age-old dream of a better and happier world shall after all become a living reality."

The April issue of WHO Newsletter devoted a large section to the topic, "Handicapped Children Can Be Brought to Normal Life."

WHO Discusses Rehabilitation

In the April issue of the World Health Organization news letter there was a leading article, appropriately illustrated, on "Handicapped Children Can Be Brought to Normal Life." It was noted that physical therapy plays an important role in the care of these children. WHO and other bodies of the United Nations are organizing international courses for professional training of rehabilitation teams, and an increasing number of fellowships are being given to health workers desiring to specialize in this field. These fellowships are primarily for workers in those countries where the need is the greatest.

March of Dimes Grant

A March of Dimes grant of $18,262 will enable the American Physical Therapy Association to include a continuing study of home care plans for polio and other patients in its educational program. The awarding of the grant, which will be under the direction of Mildred Elson, Executive Director of the Association, was announced jointly by Basil O'Connor, President of The National Foundation for Infantile Paralysis, and Mary Singleton, President of the American Physical Therapy Association.

Since 1946 a broad educational program has been undertaken by the American Physical Therapy Association with the assistance of The National Foundation for Infantile Paralysis to recruit more students for physical therapy training, to make more effective the professional training of the students, to provide visual aids and instructional material to meet the needs of graduate physical therapists in providing better care for poliomyelitis patients, and to improve personnel practices in the field.

In addition to carrying on this broad educational program, the new March of Dimes grant will enable the Association to continue its intensive study of the various physical therapy home care plans now in operation throughout the country. Association officials point out that it is becoming impossible to care for large numbers of polio patients in institutions for long periods of time because of the lack of hospital beds, insufficient professional personnel and the prohibitively high cost of institution care.

Completion of the study on home care plans, it was announced, will enable the Association to provide guidance to the agencies providing physical therapists for home care as well as advising the physical therapists thus employed. Efforts will also be made by the Association to have physical therapy home care plans included in school curricula and to stimulate physical therapists to accept field service employment.

British Journal of Physical Medicine

The April 1951 issue of this journal was entirely devoted to poliomyelitis. It included an editorial by L. Guttmann, O.B.E., M.D., M.R.C.P., "Problems of Physiotherapy in Poliomyelitis," and the following articles: "Muscle Reeducation in Poliomyelitis," "Poliomyelitis," and "Surgical Management in Poliomyelitis."

United States Air Force Medical Service, WMSC

Qualified physical therapists who seek a satisfying and rewarding career can find it in the Regular or Reserve component of the Women's Medical Specialist Corps of the United States Air Force. As commissioned officers and professional women, they are indispensable members of the team which comprises the United States Air Force Medical Service. Physical therapists who are eager to utilize their training on a high professional level discover a diversity of clinical material and opportunities to employ all types of physical therapy technics.

TYPES OF APPOINTMENT

Regular—Commissions are granted to qualified Reserve officers on active duty who desire a permanent career in the United States Air Force.

Reserve—Commissions are granted to qualified applicants who desire to serve with the United States Air Force either on active or inactive duty.

Active duty—An applicant may request extended active duty. After serving satisfactorily, an applicant may ask for additional duty if there are position vacancies or, if qualified, she may apply at any time after six months of active duty for a Regular commission.

Inactive duty—With or without previous military service, an applicant may accept a Reserve commission with inactive status in the Women's Medical Specialist Corps. A Reserve officer's interest in Reserve activities increases her professional experience, makes her eligible for promotion, and gives her service points toward retirement.

EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS

a. Must have a bachelor's degree from an approved college or university with major emphasis in physical education or the biological sciences (or, for a Reserve commission, must have completed not less than three years [90 semester hours] in a school or university acceptable to The Surgeon General, USAF) . . . and . . .

b. Have been graduated from a training course in physical therapy approved by The Surgeon General, USAF.

REQUIREMENTS FOR A REGULAR COMMISSION

1. Applicants must meet the specific education qualifications for the Regular component;
2. Be single and, if divorced, must present documentary evidence;
3. Be between 21 and 28 years of age (but should not be over 27¼ years at the time of applying);
4. Be physically and professionally qualified;
5. Have no dependents under 18 years of age;
6. Have served six months of active duty as an Air Force Reserve officer immediately prior to application.

REQUIREMENTS FOR A RESERVE COMMISSION

1. Applicant must be a female citizen of the United States;
2. Be physically and professionally qualified;
3. Possess good moral and personal qualifications;
4. Be between 21 and 45 years of age;
5. Meet the minimum educational requirements for a Reserve commission.

Applicants may be single, married, or divorced; however, those with dependents under 18 years of age are not normally ordered to extended active duty.

HOW TO APPLY FOR A RESERVE COMMISSION

Application forms may be obtained from:

The Commanding General
Continental Air Command
Mitchel Air Force Base
New York, N. Y.

Attention: Medical Reserve Branch
Office of The Surgeon General
Hqs., United States Air Force
Washington 25, D. C.

ASSIGNMENT

All newly commissioned officers entering on extended active duty are usually assigned first to Air Force medical installations where they receive an indoctrination training course in Air Force customs, procedures, and technics. Later assignments lead to duty as staff members to military hospitals where their individual specialties are utilized on a rotating and progressional pattern.

PROFESSIONAL OPPORTUNITIES

A program of career guidance is in effect which insures the well-rounded professional development of the individual officer and builds and maintains the highest standards of medical service in the Air Force hospital.

1. Planned rotation of assignments is designed to insure broad and comprehensive professional experience.

2. Opportunities to attend courses in related or allied subjects at military installations are available to all officers.

3. Highly qualified officers of the Regular component are eligible to apply for postgraduate courses in their specialty leading to a master's degree at approved civilian institutions.

4. Each year, qualified individuals who desire to become Air Force officers are selected to participate in postgraduate training in courses which have been developed with the advice of the allied national professional association and the Council on Medical Education and Hospitals of the American Medical Association. Students selected for these training programs are appointed in the United States Air Force Reserve (WMSC) and called to active duty in the grade of second lieutenant.

SECURITY

Numerous benefits, including dental and medical care, hospitalization, annual leave, travel, and retirement privileges are available to members of the Women's Medical Specialist Corps.

Annual Meeting of the National Health Council

More cooperative thinking between the medical sciences and other fields—particularly engineering and education—is vital to the conservation of human resources, Dr. Detlev W. Bronk, president, Johns Hopkins University, told an audience of two hundred at the 31st Annual Meeting of the National Health Council in New York City, April 6th.

Chief speaker at a dinner session of Council member-agency delegates and their guests, Dr. Bronk, who is also president of the National Academy of Sciences, said:

"The very fact that medical discoveries make possible new cures for diseases, new ways of preventing disease, new surgical and diagnostic procedures, raises new economic problems which must be solved if these great medical discoveries are not to be tarnished by our inability to solve the social-economic problems which are thus created."

Dr. Bronk also urged that more consideration be given to the conservation and development of intellectual ability. He said:

"The mere conservation of physical resources is not enough to satisfy men and women. . . . Curiosity and intellectual ability are among the most valuable assets of our national resources."

Fear of the future, fear of the uses to which our mounting knowledge might be put, he warned, is sapping the confidence and courage of the American people.

Dr. Robert H. Parry, medical officer of health, Bristol, England, also spoke at the dinner on experiences in meeting the civil defense problems of that much-bombed city during World War II.

Dispersal of the population, Dr. Parry declared, is the key to the saving of lives during bombing attacks. He continued:

"We believe strongly in organizing the home and strengthening it as much as we can. We did not like the public shelters at all, on public health grounds, and for other reasons. They are difficult to keep dry. They are cold. And, of course, they collect large numbers of people together."

Civil defense plans of various government agencies and voluntary and professional organizations were discussed at an afternoon symposium on "Mobilization for Health Security—A Challenge to the Voluntary Health Agencies." Leading the discussion were:

Surgeon General Leonard A. Scheele
U. S. Public Health Service

Dr. Norvin C. Kiefer, Director
Health Services & Special Weapons, Defense Division
Federal Civil Defense Administration

Brig. Gen. Albert H. Schwichtenberg
Armed Forces Medical Policy Council
Department of Defense

Dr. G. Foard McGinnes, Medical Director
American National Red Cross

Dr. George A. Lull
Secretary & General Manager
American Medical Association

Dr. Harry S. Mustard, Chairman
Committee on Public Health Defense Program
American Public Health Association

Miss Pearl McIver
Past President, American Nurses' Association
Former Chairman, Joint Committee on Nursing in National Security

Dr. Marcus D. Kogel
Commissioner of Hospitals, New York City
Director, Medical Emergency Division, New York City Office of Civil Defense

At a morning business session of delegates of the National Health Council's thirty-six member agencies, the joint planning and action which constitutes the Council's program were discussed. Closer relations with other agencies and coordi-

nating bodies in fields akin to health, it was agreed, are essential to proper discharge of the Council's expanding function.

Dr. Ernest L. Stebbins and Dr. Thomas D. Dublin, Council president and executive director, respectively, described the past year's progress in stimulating the development of local health departments and local health councils.

The addition of a new member, the Association of Schools of Public Health, brought the total number of Council member agencies to thirty-six, compared with twenty-two in 1948. The meeting elected three associate members—American Diabetes Association, American Physical Therapy Association, and National Multiple Sclerosis Society—to active membership.

During the last half of 1950, it was announced, five new agencies had joined the Council: American Psychiatric Association, Arthritis and Rheumatism Foundation, National Medical Association, American Home Economics Association, and the National Association for Mental Health. The last-named resulted from amalgamation of the National Committee for Mental Hygiene, which had been a member, the National Mental Health Foundation and the Psychiatric Foundation.

In its six-thousand-word annual report (available on request) the Council stressed the "growing recognition by the public that health is essential to national security."

It urged member agencies, through their local and state affiliates, to participate more actively in joint community activities for expansion of health services.

Surgeon General Named

The nomination of Major General George E. Armstrong to succeed Major General Raymond W. Bliss as Surgeon General of the Army has been confirmed. General Armstrong has served as Deputy to General Bliss during his four-year tour of duty and has been active in affairs of the American Medical Association.

"Ideas for Living"

The March issue of the *Paraplegia News* describes nine gadgets particularly adapted to making the daily life of the paraplegic more self-sufficient.

The *Paraplegia News* is the official publication of the Paralyzed Veterans of America, with editorial offices at the Eastern Paralyzed Veterans Association, 99 Park Avenue, New York 16, N. Y.

Congress Sessions

The American Congress of Physical Medicine will hold its twenty-ninth annual scientific and clinical session at the Shirley-Savoy Hotel, Denver, Colorado. Scientific and clinical sessions will be given on the days of September 4, 5, 6, 7, and 8, 1951, inclusive. All sessions will be open to physicians and other professional personnel.

Index to Current Literature

Arthritis and Rheumatism

Surgical Treatment of Deformities of Rheumatoid Arthritis of the Forefoot and Toes. William A. Larmon. Quarterly Bulletin of Northwestern University Medical School, Spring 1951.

Heat and Cold

The Hypertherm in Medicine. A. J. King. British Journal of Physical Medicine, March 1951.

Injuries

Injuries to the Elbow Region. I. W. Kaplan. American Practitioner, March 1951.

Recurrent Subluxation of the Ankle Joint. Knox Dunlap and Edward F. Wierzalis. U. S. Armed Forces Medical Journal, March 1951.

Miscellaneous

Scientific Medical Writing. Johnson F. Hammond. Archives of Physical Medicine, March 1951.

Coordination of Community Services. Louise F. Galvin, Albert S. McCown, and W. H. Hoobler. Hospitals, March 1951.

The Role of the National Foundation for Infantile Paralysis. Herbert T. Wagner. Hospitals, March 1951.

Poliomyelitis

Treatment of Bulbar Poliomyelitis. I. A. Brown and A. B. Baker. Postgraduate Medicine, February 1951.

An Epidemic Experience Report on Poliomyelitis. Morris Greenberg. Hospitals, March 1951.

Abstracts

The Polio Role of the Hospital Administrator

Moir P. Tanner. In HOSPITALS, 25: 3:42, March 1951.

The responsibility of a general hospital in providing facilities for the adequate care of infantile paralysis patients is a very real one and cannot lightly be tossed aside. It is on the shoulders of the hospital administrator mainly that this responsibility lies, and he should initiate the planning essential to future hospitalization of poliomyelitis patients.

The head of any hospital which contemplates accepting infantile paralysis patients should have some knowledge regarding the special treatment technics involved. He should realize that to accept these cases, adequate space, equipment, and personnel must be ready on very short notice.

The greatest asset to a hospital administrator in solving his problems is an official Polio Committee, of which he should be a member.

The responsibility of the hospital and the administrator does not end with merely the admission of infantile paralysis patients. He must see that the patient is not only provided with adequate medical care but also with a proper recreational program and educational facilities.

The administrator will come to realize—if he has not already done so through previous polio experience—that the polio patient's race, creed, or color does not alter the shock to the parents, and he will find that his contacts with parents of these polio patients can be enhanced if monthly meetings of parents and hospital staff are arranged. At such meetings the parents will have opportunities to talk to the nurse, the physical therapist, the physician, as well as the hospital administrator. Attendance on the part of members of the hospital staff caring for the patients should be required.

There can be no minimizing the extent of a hospital administrator's responsibilities as they relate to polio, but they are not insurmountable. They can be solved by proper planning and cooperation with the other volunteer and official agencies of a community.

Rehabilitation Services for the Polio Patient

Howard A. Rusk, M.D. In HOSPITALS, 25:3:49, March 1951.

Early diagnosis and hospitalization and improved acute care are not enough for those persons stricken with poliomyelitis, for they do not meet the needs of the patients who are left with severe disability. A diversified but integrated program must be developed for such patients on the basis of their needs in meeting day-to-day life situations. They must be provided with a program of training that will teach them to utilize all their residual abilities to the maximum.

The practice of rehabilitation begins with the belief in the basic philosophy that the physician's responsibility does not end when the acute illness is ended; it ends only when the patient is retrained to live and work with what he has left. This basic concept of the physician's responsibility can be achieved only if rehabilitation is an integral part of medical care.

In Bellevue and Goldwater Hospitals and at the Institute of Physical Medicine and Rehabilitation, after the basic medical work and the range of motion, muscle strength, and needs of daily living tests, the physicians, in conference with other staff members, prescribe a five-hour-a-day program for the patient. These prescribed activities include training in ambulation and elevation, physical therapy, occupational therapy, speech therapy, therapeutic exercise, social service, psychological services, or any other activity which may be helpful in meeting the needs of the patient.

Although it is obvious that the small community hospital cannot afford the space, equipment, and personnel for such a full, comprehensive rehabilitation program, the basic activities of physical rehabilitation can be carried out in a small physical therapy department if it is well organized and staffed by trained physical therapists.

Where visiting nurse services and home care programs are available, much of the physical rehabilitation can be carried on in the home with periodic visits to the hospital's outpatient physical therapy department.

There are numerous community services which can contribute to the rehabilitation of the patient. It is the responsibility of the physician and the hospital administrator to see that the patient and his family are aware of these resources and that proper referral is made to them.

The Indiana Planning Committee for Polio

LeRoy E. Burney, M.D. In HOSPITALS, 25:3:39, March 1951.

The State Polio Planning Committee was established as a temporary expedient in an emergency, but it worked so well, both as a planning and an action group, that all representatives requested it continue on a permanent basis.

Some of the accomplishments of this committee were (1) a closer integration of all groups—voluntary and official—concerned with the diagnosis, care, treatment, and rehabilitation of poliomyelitis cases; (2) an understanding of the services which each group had to offer; (3) an agreement upon uniform policies affecting the care and treatment of poliomyelitis patients, and (4) general recommendations to the communities in the event of the recurrence of poliomyelitis. Most important of all, this committee demonstrated that voluntary and official health agencies, the medical profession, the hospital administrators, and others concerned with problems relating to poliomyelitis can work together effectively for the best interests of the patient, the community, and the state.

Diagnostic Screening, Admission, and Follow-up in Acute Stage

Alex J. Steigman, M.D. In HOSPITALS, 25:3:44, March 1951.

Diagnostic screening is a clinical rather than an institutional problem. Admissions should be a medical rather than an institutional problem, and they should be confined to those patients for whom the "gain of hospitalization is worth the pain." Patients severely paralyzed, those with severe pain, or those with respiratory and bulbar or urinary complications, should make up the patients primarily considered for admission to hospitals except for those mildly ill patients who live in such remote places as to be away from adequate medical and hospital care.

Follow-up arrangements in the acute stage involve the linking together of a number of interested parties. For this, the intelligent liaison work of the modern medical social service worker is of paramount importance.

In the wake of an epidemic, the handling of such patients in groups and clinics for follow-up arrangements is frequently more feasible and desirable than any other arrangement.

Planning for Home Care Treatment

Emil D. W. Hauser, M.D. In HOSPITALS, 25:3:47, March 1951.

The ultimate goal of treatment for poliomyelitis is the rehabilitation of the individual. To assure this goal, home care treatment is essential, and unless treatment in the hospital is followed up by a program of treatment in the home, the benefits of hospital care could be lost.

There is an emotional and psychological improvement with the return of the patient to his home, after the original adjustment has been made. Also, there are more opportunities for doing functional exercises in the home than in the hospital. Readjustment of the patient to his normal environment is aided by home care, and since the objective in all cases is rehabilitation of the individual to normal, we want to place the patient in his normal environment as soon as this is feasible. During the hospitalization the aim is to secure the maximum benefits of hospital care in as short a time as possible. This necessitates the concerted efforts of the orthopedist, physical therapists, occupational therapists, nurses, medical social worker, and others on the hospital staff.

The greatest problems in the care of poliomyelitis are presented by the respirator cases and those patients who are so severely paralyzed as to be totally dependent. When the point is reached where the improvement from hospital care is no greater or is not so great as the improvement which would be obtained if the patient were at home, these patients should be selected for home care.

Home care requires teaching parents or other members of the family to follow through with the treatment which was initiated in the hospital. Before the patient leaves, specific instructions are given for the family's part in the program of home care. This includes the exact way of carrying out exercise, the amount of exercise to be allowed, the amount of rest which is required, and control of the diet and administration of tonics. This is accomplished through a conference of family, physician, and physical therapist.

Contact with the personnel that gave attendance at the hospital is continued, for those who can be transported, through the outpatient department. Muscle tests are made as necessary, progress is recorded, exercises are checked, and further treatment is prescribed and taught the patients. These periodic check-ups assure continued progress.

In some cases where the patient is completely home-bound, visits are made to the home by the medical social worker, the physician, and the physical therapist. Close coordination must be maintained between the medical staff of the hospital and the physical therapy staff of the Visiting Nurse Association.

As the patient becomes ambulatory it is more economical to provide treatment at a central establishment such as a rehabilitation center or a Visiting Nurse Association treatment center.

In some cities the public school system and the parochial schools provide special teachers for the continuance of education of the child while he is in the hospital and while he is confined to his home. Later, the schools for crippled children are a great asset.

Occupational therapy also is started at the hospital and continued at home. It frequently is a very important factor in recovery of function.

All of the factors in the home care program are coordinated through the medical social service department. If this type of organization is not available, the problem can be met adequately, particularly on a smaller scale, if the family is properly trained, if the patient's care is followed up at home, and if sustained interest is shown until such time as the patient has become totally rehabilitated.

Psychological Preparation of the Amputee

Henry H. Kessler, M.D., Newark, N. J. In INDUSTRIAL MEDICINE AND SURGERY, 20:3:107, March 1951.

Where formerly the amputee was given only isolated and fragmentary attention, or, more usually, left entirely to his own inadequate resources, we now realize that only a total program of physical and mental rehabilitation can properly meet his needs.

Physical reconditioning is especially valuable to the leg amputee in providing for the patient the necessary preparation for the wearing of a prosthesis. Medically prescribed exercises, gymnastic activities, and competitive sports offer both physical and mental stimulation for the convalescing amputee. A valuable opportunity is lost if the hospital period is not used for psychological conditioning and preparation for his future.

Recent Avances in Physiotherapy

L. J. Barford, D.M. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 14:2:25, February 1951.

Physical medicine is today showing signs of becoming divided into further specialized fields. Special units have already developed for poliomyelitis, cerebral palsy, rehabilitation, orthopedics, and the rheumatic diseases. The physiatrist and the physical therapist cannot adopt the expectant method of treatment. They cannot apply their specialty by being inactive.

Some of the newer aspects of physical medicine are mentioned, but no attempt has been made to give details of technics. As well as the newer application of old methods, mention is made of the electromyograph, the microtherm, and ultrasonotherapy.

Epidemic Poliomyelitis

Harry M. Weaver, New York City. In THE NEW ENGLAND JOURNAL OF MEDICINE, 243:26:1019, December 28, 1950.

Although the program of research against poliomyelitis has not as yet provided a practical means of control for the human malady, it has produced a vast store of knowledge about the human and experimental forms of the disease. This research has cleared up much of the confusion that existed twelve years ago, and has produced sufficient knowledge to permit definition of the lines of attack that might reasonably be expected to provide a means of control for the human disease.

It appears to be consistent with present knowledge to say that there is little reason to hope that the virus can be eliminated from the environment or that human exposure to it can be effectively prevented. It is equally doubtful that much can be accomplished through serotherapy. It has been learned that complete recovery from poliomyelitis can be ensured only if destruction of nerve tissue by the virus can be prevented.

Although it is true that present methods of nonspecific therapy have saved lives and reduced the amount of crippling, there is no prospect that such treatment, however much it is improved, can prevent destruction of nerve tissue. There is, however, much support for the statement that control of human poliomyelitis is attainable through chemotherapy, chemoprophylaxis and seroprophylaxis, and vaccination. Some of these have

already been proved to be effective against the experimental form of the disease. The major problem today is to determine which, if any, of these might provide a practical means of control for the human disease.

Treatment of Alopecia Areata

Nelson Paul Anderson, Los Angeles. In POSTGRADUATE MEDICINE, 9:2: 137, February 1951.

The successful treatment of alopecia areata has more to do with the art than with the science of medicine. The host of entirely different therapeutic procedures, all of which have been used with considerable success, testifies to the truth of this statement. Many, if not most, of the patent-medicine hair restorers, rejuvenators, mange cures, and the like owe their chief claim to fame to their success in causing the regrowth of hair in this capricious condition. Nevertheless the condition can and should be treated, because of its psychogenic effect upon the patient.

Among the office procedures which may be used is the application of ultraviolet light. This may be administered by means of the ordinary quartz light, the cold quartz light, or the carbon arc light. In instances where the loss of hair in patches is widespread such treatments may be given in gradually increasing doses to four areas of the scalp (e.g., the top, laterally, and posteriorly). Care should be taken in such cases to protect the ears and skin adjacent to the scalp by means of a clean towel which covers the forehead, ears and posterior neck. It should be applied fairly tightly and held in place by a hemostat. The first or test dose should be one which produces a mild erythema. The dosage is gradually increased by 15 to 30 seconds at weekly intervals until a total time of four to five minutes for each region treated is reached.

If the area of alopecia areata is small and solitary, one may use either the air-cooled or water-cooled ultraviolet if this is available. With either of these pieces of ultraviolet equipment smaller time exposures must be used. However, such small areas may also be treated by any ultraviolet light apparatus by making a window or opening in a paper towel. The protection at all times of the patient's eyes, as well as those of the operator, is to be stressed. Such ultraviolet light treatments should be given once weekly for three to four months or longer before they are abandoned.

If ultraviolet light therapy is not available or has already been tried without success one may paint small limited areas with pure phenol which is neutralized within 10 to 12 seconds by ethyl alcohol.

For local use at home the patient may be given stimulating and antiparasitic preparations in ointment form.

Treatment of Rheumatoid Arthritis

Eugene E. Simmons and Robert S. Long, Omaha. In POSTGRADUATE MEDICINE, 9:1:55, January 1951.

The treatment of rheumatoid arthritis can be divided into general and specific measures. General measures of proved value are: attention to nutrition, correction of anemia, relief of pain, maintenance of joint mobility, prevention of deformities, preservation of muscle strength and tone, and psychotherapy.

The judicious use of heat in any form to the affected joints is of great benefit in helping to relieve pain and maintain joint mobility. Heat may be used in the form of hot baths, hot packs, hot water bottle, electric heating pad, or infrared lamp. Hot wax has been found to be especially useful in controlling the painful, swollen, stiff finger, hand, and wrist joints. Heat is most useful if of only moderate intensity, maintained for periods of one to two hours, and repeated three to five times daily. If the heat is too intense or prolonged, discomfort and restlessness may actually be increased.

During the acute phase of the arthritis, mobility must be maintained by daily passive motion of each affected joint through as full a range of motion in all planes as can be tolerated by the patient. Active motion, "exercises," and weight bearing should be discouraged during the active phase. Rest of the affected joints and of the entire body is of prime importance.

It is very important to prevent deformities. The patient must be observed frequently and any tendency toward flexion deformities must be counteracted at once. It may be necessary to use split casts, splints, or braces during a part of the day or night. In this connection, the counsel and advice of a competent orthopedic surgeon is invaluable. If deformities have occurred, active orthopedic treatment with the use of corrective splints, braces, or surgical procedures should be carried on by a competent, interested orthopedic surgeon after the disease has become quiescent.

One of the outstanding features of rheumatoid arthritis is the marked muscle atrophy which takes place. This must be prevented insofar as possible by the use of daily, gentle, muscle massage. If this attention to the muscles is neglected, there may be such loss of strength and tone that the patient is unable to manipulate the joints properly even after the active arthritis is relieved.

Massage should be given to all the major muscle areas of the body. A member of the family should be instructed by the physician in the correct manner of giving this gentle massage. This is not only more economical for the patient, but a member of the family is less likely to do harm by too-vigorous massage than an improperly trained or disinterested professional masseur. The massage and manipulations should be of such gentleness that pain, discomfort, or fatigue do not persist for more than one hour thereafter.

Management of the Ambulant Arthritic Patient

Arthur M. Pruce, M.D. In THE JOURNAL OF THE MEDICAL ASSOCIATION OF GEORGIA, 40:3:101, March 1951.

The great bulk of arthritic patients seen in an active hospital, clinic, and private practice are ambulant. As long as they are ambulant the objectives of good management would be maintenance of this ambulation through control of pain and stiffness, retention of functional motion, and protection against deformity.

An effective program must offer simple, readily available, and inexpensive measures. A single hormone or a single drug or one physical modality would be the ideal answer; however, with rare exceptions, arthritis and rheumatism cannot be cured by any specific measure, or one course of treatment. Each case requires a program adapted to its individual manifestations.

In treating an arthritic hand, the author suggests the injection of novocain for fibrositis, with hot paraffin dips and local massage as supplementary measures. When rheumatoid arthritis of the hand is active and progressive, splinting in a functional position usually will relieve pain, cause muscle spasm to subside, and permit early motion. After removal of the splint, hot paraffin packs are effective in overcoming

residual muscle spasm and pain, as well as improving circulation. In chronic degenerative joint disease involving the fingers, ethyl chloride spraying of these areas during acute pain has produced a satisfactory analgesia. The patient is taught how to self-spray to the point of cooling with precaution against freezing the area. When acute inflammation has subsided, hot paraffin packs are useful.

Cervical arthritis with or without nerve root pain is very common, and the most important tool in its management is neck traction with a halter. Traction, to be effective, must separate spinal segments, which can be accomplished by the use of a head halter and adequate weights. This is followed by diathermy and massage. These measures are supplemented by a traction program at home, the prescribed program varying according to such factors as the patient's symptoms and response. Symptomatic treatment includes hot wet packs and sedatives through the acute stage. As pain subsides, cautious active motion to restore a functional range is introduced.

Degenerative joint disease or osteoarthritis probably is the most common pathology associated with back ache in the older patient. The shortened lumbar muscles are treated with diathermy and deep massage. With relaxation of the contractured spinal muscles, exercises for the atonic abdominal and gluteal muscles are prescribed. For back muscles in painfully acute spasm, an adequate corset support is far superior to adhesive strapping.

In the lower extremity, the knee joint is the most often involved, the most often seen. In the acute phase, short periods of bed rest are superior to crutches. Usually the treatment of painful knee consists of the readily available application of heat. Unfortunately, the misuse of heat is a common occurrence. It is a mistake to apply the heat to the anterior aspect of the knee, although it is true that "baking" will have a local and transitory analgesic effect. Excessive "baking" of a swollen knee will engender a chronic passive congestion, thereby aggravating local disease. Diathermy of the knee here is contraindicated. Associated with the swollen knee is shortening of the hamstrings, atrophy, and weakness of the quadriceps femoris. Rationally, heating should be applied to the hamstrings to release muscle spasm, and when pain subsides in the knee, progressive exercises of the quadriceps should be instituted to obtain and maintain proper alignment of the joint.

Although cortisone and ACTH have been heralded as the cure for rheumatic and arthritic diseases, we know of their effects only in gout and in the collagen group, especially rheumatoid arthritis. There is no convincing evidence that any single hormone, or drug, or physical measure can cure rheumatic or arthritic diseases.

Physical Medicine and Rehabilitation: The Problems of Education

Howard A. Rusk, M.D., New York. In ARCHIVES OF PHYSICAL MEDICINE, 32:3:137, March 1951.

In the undergraduate, graduate, and postgraduate teaching in physical medicine and rehabilitation we cannot emphasize too strongly that the underlying fundamental is the teaching of good medicine. This is difficult, for the specialists in our field must have at least a basic understanding of medical, surgical, orthopedic, neurological, and psychiatric problems, both diagnostic and therapeutic. We cannot accept without question the diagnosis, evaluation, and therapeutic prescriptions of our colleagues without a reevaluation if we are to accept the responsibilities of specialized care. The surgeon does not operate on the diagnosis of the internist without himself examining the patient. This is true throughout all of medicine where good medicine is practiced. We must stand on the same firm cornerstone.

We must also remember, in discussing both education and the practice of physical medicine and rehabilitation, that this is a combined specialty. There will be some in the specialty whose primary interest is in physical medicine as it obtains to the routine treatment of acute conditions as well as to the rehabilitation of the disabled. There are some whose primary interest is in the problems of rehabilitation, taking into consideration the medical, psychological, psychiatric, social, vocational, and all other aspects that have to do with the total rehabilitation of the individual.

When the physician is capable of standing his ground in medicine generally and can add to this the special technics and modalities pertinent to his particular field, he is then a specialist, not only in name but in reality.

Results of Treatment of Subacromial Bursitis in 340 Cases

Guy A. Caldwell, M.D., and Byron M. Unkauf, M.D. In ANNALS OF SURGERY, 132:3:432, September 1950.

The records of 485 patients with subacromial bursitis treated in the Ochsner Clinic during the seven-year period ending July 1949, were analyzed in an effort to evaluate the various methods of treatment employed. The treatments most used, regardless of the stage of the disease, were procaine injections and roentgenotherapy, each supplemented by physical therapy; some patients were treated with physical therapy alone. Follow-up reports of the results obtained on 340 patients after an average period of three years were analyzed with reference to stage of the disease at the time treatment was given. Analysis of these results indicates that:

Satisfactory relief of pain and restoration of a useful range of motion may be obtained by conservative measures in 70 to 85 percent of cases.

Roentgen therapy is an effective measure for the relief of pain produced by tension within the supraspinatus tendon in 85 percent of cases.

Physical therapy is a necessary adjunct to all other measures that may be employed. Most patients were advised to have some form of heat applied to the shoulder, followed by gentle massage to relax the muscles, and then to practice circumduction movements and other stretching exercises to combat the formation of adhesions. Heat, massage, and stretching exercises were used, whether carried out at home or by a physical therapist. However, most patients were treated by an experienced physical therapist, at least until the patient became reasonably comfortable and had mastered the technic of doing the exercises properly. Physical therapy alone is adequate for many subacute or mild chronic cases.

Recurrent attacks are to be anticipated in 22 percent of the cases following acute or subacute symptoms and in 33 percent of patients with chronic symptoms.

The presence or absence of calcified deposits seems to have no relation to the various stages nor to the incidence of recurrent attacks.

The longer the symptoms have persisted, the poorer the outlook for relief by conservative measures. In the chronic group of cases 33 percent had poor results.

Resumption of Activity Following Certain Tendon Transfers to the Digits

Charles R. Brooke, M.D., Providence, R. I., and John F. Cullinan, West Roxbury, Mass. In ARCHIVES OF PHYSICAL MEDICINE, 32:3:156, March 1951.

This paper outlines an approach to the postsurgical treatment of tendon transfers by active and active-resistive exercises and, where indicated, by the judicious use of electric stimulation. A technic in the application of certain exercises, which Brooke and Cullinan believe to be original, is described. Certain conditions may exist that exert influences contrary to maximum functional recovery and over which the physical therapist and patient have no control. The presence of such conditions usually is pointed out by the surgeon, who will estimate the degree or extent of movement to be considered as maximum. Being aware of the conditions of the involved structures at the time of surgery, he should instruct the physical therapist in the degree of joint motion that is compatible with the safety of the tendon sutures. This should be so, especially in the initial attempts at motion.

Extreme care should be taken in the administration of electric stimulation. The danger to the tendon anchorage is so great that the intensity of the stimuli should be gradually increased from zero to the point at which a faintly perceptible tendon flicker is observed. It should be clearly understood that electric stimulation is only a substitute for voluntary exercise and should not be used where active motion is possible.

The forerunner of any given movement is the bodily "need" of it. This "need" usually is interpreted as the prior stimulus, but the need or desire to perform or carry out a specific movement will be unrequited if the patient has lost or does not possess the memory of having performed the act.

Reciprocal inhibition of antagonists is necessary to smoothly integrated movement but *a priori* is shared by the physiological distribution, through surgical efforts, of motor units. Difficulties encountered in the proper execution of these movements, more often than not, are due to imbalance of relative muscle strength.

It is obvious that following tendon transfer the resultant movement is not "new" and it is not "taught"; rather, it is "old" and as such has established a neural pattern.

Surgical procedures determine the type and scope of the movement; seldom is it of the pure, pre-injury type. The result of the first voluntarily induced attempt, therefore, will be specific under the existing conditions; it cannot be changed by exercise and is amenable only to increase in strength.

Visual orientation is of great importance, particularly where there has been extensive nerve damage. Loss of physiologic awareness of position in space following such damage is compensated for, at least to some degree, by the use of the "simulated muscle-tendon." Its application is simple, conforming to the origin and insertion of the transfer. It is used not as a means of producing passive movement, but to impart visual impression of the lines of pull of the transferred tendon.

The conclusion is reached that the application of the "simulated muscle-tendon" method is a valuable restraining adjunct in the postsurgical resumption of activity, following tendon transfer.

Motivation of Children with Multiple Functional Disabilities: Hartwell Method

R. Plato Schwartz, M.D.; Frederick N. Zuck, M.D.; Frances H. Parsons, Ph.D.; Kathleen Wingate, R.N.; Thomas Lacey II, M.D.; and Moulton K. Johnson, M.D. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 145:13:951, March 31, 1951.

At the Edith Hartwell Clinic the traditional methods of passive physical therapy and rigid bracing were applied to patients with neuromuscular disorders such as cerebral palsy. This form of therapy was not productive, so a new, active approach was formulated. This approach has for its basis the following premise: A child's development is no greater than the sum of his successful voluntary efforts to express himself emotionally, intellectually, and physically; children with neuromuscular disorders can be stimulated to voluntarily attempt various activities; if the activities are suitably simplified, the patient's efforts will be successful; successes will encourage the child to attempt the increasingly complex activities that lead to physical independence.

The child with cerebral palsy presents an aggregate of disabilities. To assure successful voluntary efforts, the child's environment must be simplified to the level of his emotional, intellectual, and physical resources regardless of chronologic age. This has been done through the creation of motivating devices. Examples of the application of these are given.

The physical disability is only one aspect of any cerebral palsy patient's multiple handicaps. The professional staff now directs attention to the full exploration of each child's emotional and intellectual resources regardless of the age in years. By initiating voluntary successful physical efforts the patient is graduated to successively more complicated functions as required for physical independence.

Effect of Venous Occlusion on Peripheral Arterial Blood-Flow

Jesse E. Thompson, M.D., and John R. Vane, B.Sc. In THE LANCET, No. 6651, p. 580, February 17, 1951.

Intermittent venous occlusion, by means of a pneumatic cuff placed around the thigh, was introduced in 1936 by Collens and Wilensky for the treatment of patients with obliterative vascular disease. Since its introduction numerous other investigators have examined the therapeutic effects of intermittent venous occlusion in man, yet there does not seem to be any unanimity about its efficacy.

In this investigation Thompson and Vane studied the acute effects of venous occlusion on the rate of arterial flow in animals by two direct methods not previously used for this purpose; namely, perfusion and serial radiography. They found that during venous occlusion the arterial inflow to the extremity decreases. Also, after release of the occlusion, there is commonly a transient increase in arterial flow above the pre-occlusion level, but this reactive hyperemia does not compensate for the decreased flow during occlusion. The rate of flow following release is equal to, or less than, the rate preceding occlusion; never higher.

Serial radiography showed a delay in the filling of the vessels on the occluded side, and a considerable reduction in the number of visible small arterial vessels under the inflated cuff.

There is no direct experimental evidence in man or in animals to substantiate the view that venous occlusion increases the arterial blood-flow to an extremity.

Tonsillectomy and Adenoidectomy and Poliomyelitis

Alden H. Miller, M.D., Los Angeles. In ARCHIVES OF OTOLARYNGOLOGY, 53:2:160, February 1951.

A survey of the 1,229 cases of poliomyelitis occurring in Los Angeles County during the epidemic year 1949 has been made in an attempt to determine whether there is any relationship between a recent tonsillectomy and adenoidectomy operation and (1) the incidence of poliomyelitis and (2) the development of bulbar poliomyelitis; as well as in an attempt to determine whether (3) tonsillectomies and adenoidectomies should be discontinued during the summer months of highest poliomyelitis incidence.

The results of the statistical analysis indicate no clinically or statistically significant deviation between the actual and expected incidence of poliomyelitis developing in Los Angeles County during 1949 in patients recently tonsillectomized and adenoidectomized, even in the months of July through October. In view of these observations, no reason seems to have been found to discontinue indicated tonsillectomies and adenoidectomies during the summer months.

The Frozen Shoulder: Treatment by Manipulation

A. G. Timbrell Fisher. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 14:3:49, March 1951.

X-ray examination should immediately precede any form of physical or manipulative treatment of stiff or frozen shoulder. In the earlier stages, measures of physical treatment—such as heat in its various forms, short-wave diathermy, massage, or assisted and passive movements—may be of great value, combined with rest to the joint (not necessarily complete) and such purely medical measures as may be deemed necessary. By such treatment, adhesions often may be prevented and the patient may recover with full movement of the joint and functional use.

Unfortunately, by the time the patient reports to the physician, marked stiffness often has already supervened. Furthermore, even if the patient has reported early, improvement by the physical treatments mentioned above may sometimes fail to prevent the onset of an obstinate type of stiffness, which may be general or may involve some particular movement, such as rotation. In such cases, when stiffness due to adhesions already has developed, it often is possible to improve or even to cure by the measures mentioned above (and particularly by exercises with weights and pulleys or in the suspension apparatus), supplemented by gentle manipulation by the physical therapist.

It is important, however, when it is found that progress is not being made, to resort to manipulation under anesthesia, with the important proviso that this should always be performed by a qualified doctor who has specialized in the subject, for otherwise the manipulation may be useless or even dangerous.

After-treatment is a very important principle, especially in the form of exercises to maintain and consolidate the increased range obtained by the manipulation and to develop the wasted muscles. It should not be deferred for several days, but should commence immediately, as soon as possible after the patient has recovered from the anesthetic.

It is a wise plan to be content, in such cases, with a slight or moderate degree of improvement, to follow up the manipulation by the after-treatment described above, and then to repeat the manipulation in about a week's time. This process may have to be repeated, but it is rarely necessary to perform more than three manipulations even in a severe case.

Experience with Cortisone in the Treatment of Rheumatoid Arthritis

Paul J. Bilka and Gordon Cader, Minneapolis. In POSTGRADUATE MEDICINE, 9:3:231, March 1951.

The authors describe their clinical experience in the treatment of rheumatoid arthritis with cortisone. Several dosage schedules were used in an attempt to produce more lasting benefits from this powerful and dramatic agent.

Cortisone Combined with Intensive Physical Therapy: It has been a common observation for patients with mild or recent flexion contractures of various joints to find these previously deformed joints straightened out and returned to a normal range of motion often within a matter of days after the initiation of cortisone therapy. More severe or long-standing contractures, however, are only partially relieved. In these instances, physical therapy is of special value. The marked reduction in the active rheumatoid process due to cortisone allows for more intensive physical therapy measures. Joints can be manipulated with the production of much less pain and muscle spasm. The patient can more actively participate in muscle training.

So convinced are the authors of its value, that physical medicine has been made an integral part of the program of almost all patients to whom they have given cortisone.

Case reports are given, one of which illustrates the value of combined cortisone and physical therapy with the maintenance of a mechanical gain, despite the recurrence of the active rheumatic symptoms on cessation of cortisone.

In another case report, the lessened pain and muscle spasm, and greater ease in carrying out physical therapy during the first of two hip cup arthroplasties when cortisone was used, as compared with the second arthroplasty when cortisone was not used, were very apparent.

Head Traction Attached to Corset in Care of Scoliosis

Robert L. Bennett, M.D., Atlanta. In ARCHIVES OF PHYSICAL MEDICINE, 32:2:84, February 1951.

The treatment of scoliosis by preventive or corrective physical measures probably is the most difficult problem faced by the physiatrist in the care of neuromuscular diseases. The goal of his endeavors is to restore and/or maintain normal alinement of the spine, or at least to maintain sufficient mobility so that growth will not cause increased curvature, and to hold maximum correction by his conservative methods so that any necessary surgical procedure can be deferred until the optimum age for greatest success.

The control of scoliosis by conservative measures depends upon very early recognition of the causative and accelerating factors and immediate restriction of activity, on physical therapy and on supportive apparatus.

Commonly used corsets, jackets, or back braces usually are ineffective in correcting or even holding a scoliosis, particularly if they depend on pressure against the rib cage for the force of correction.

A type of traction brace is described to be used as a means of holding and perhaps augmenting the gains made by intelligent physical therapy.

Recent Advances in the Treatment of Rheumatoid Arthritis

Geoffrey Loxton, M.B., M.R.C.P. In THE OVERSEAS POSTGRADUATE MEDICAL JOURNAL, 5:17:30, October 1950.

Since the announcement by Hench and his collaborators at the Mayo Clinic that cortisone (17-hydroxy-11-dehydrocortico-sterone, Compound E) and ACTH (pituitary adenocorticotrophic hormone) can produce dramatic improvement in patients suffering from rheumatoid arthritis, the medical and lay press have shown a burst of interest in the treatment of this tragic and ancient disease.

In this article an attempt has been made to discuss the significance of the new forms of treatment which have been introduced during the last twelve months. None of them yet fulfills the criteria of a cure or of an established therapy. There is, nonetheless, great hope that from this tremendous volume of work and interest our knowledge of the fundamental pathology of the disease may increase and a therapy emerge. For the present, however, these methods do not replace the older treatments of rest, physical therapy, and the help of the orthopedic surgeon.

The Assessment of Results in the Conservative Treatment of Cerebral Palsy

J. H. Crosland. In ARCHIVES OF DISEASE IN CHILDHOOD, 26:125:92, February 1951.

In order to assess the progress made by a child undergoing treatment for physical defects associated with cerebral palsy, it is necessary to adopt a scheme which is simple, easy to work, capable of alteration, and, above all, free from ambiguity.

A very detailed chart of skill tests is given which is very similar to those designed by Phelps. The charts are expressed entirely in terms of physical functions and these functions are of the simplest form, but are, at the same time, fundamental for complete physical ability. The scheme presented is divided into two sections: physical therapy charts and occupational therapy charts. The physical therapy charts show the functional ability of the lower limbs and trunk muscles rather than that of the upper limbs, though, for a few, upper limb movement also is necessary. If necessary, graphs of the progress made in selected functions can be drawn, and are particularly useful in stimulating a child's interest in his achievement. The physical therapy skill tests include rolling, crawling, sitting, reciprocation, balance, and walking (with and without callipers recorded separately).

Results of treatment at St. Margaret's School, Croyden, are shown in table form. With these tests, it is easier to make a large numerical advance from an initial low score than from a high one.

In these cases greater improvement was observed with prolonged than with brief treatment. Improvement was not less in children with relatively low intelligence quotients than in the more intelligent, and spastic tetraplegia was as suitable for treatment as athetoid tetraplegia.

Concept of "Acceptance" in Physical Rehabilitation

Morris Grayson, M.D. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 145:12:893, March 24, 1951.

The purpose of this paper is to emphasize and elucidate the psychodynamic aspects of the concept of acceptance as it is applied to physical rehabilitation. Acceptance as it is commonly seen appears to be only a symptom but is in reality part of a greater complex that is within the realm of the total personality of the individual. The psychodynamic significance of acceptance is unfortunately too often abbreviated. Expressions such as "willingness to be rehabilitated" or "cooperativeness," while expressing in part the symptomatology of acceptance, do not give the real picture or cast any light on the psychological problem that any disabled person faces.

The psychodynamics of acceptance involve two processes: (a) psychobiologic incorporation (the body image) and (b) social integration (the reality principle). All workers in rehabilitation are familiar with the many social obstacles that a disabled person has to hurdle in order to effect rehabilitation.

Acceptance and rehabilitation can take place without a physician's aid, but in many cases a center of rehabilitation is necessary.

A psychiatric team functions directly by psychotherapy to the patient and indirectly by education of other workers in the rehabilitation team to the individual psychological needs of the patient.

The Use and Abuse of Physical Medicine in the Treatment of Peripheral Vascular Diseases

Andrew G. Prandoni, M.D., Washington, D. C. In ARCHIVES OF PHYSICAL MEDICINE, 32:2:100, February 1951.

Treatment of peripheral vascular disease is aimed at (1) preventing tissue death by correcting the disproportion between the throttled blood supply and the demands of tissue metabolism, (2) conserving function in tissues not already irretrievably damaged, and (3) rehabilitating the patient. It is obvious from a consideration of these aims that physical measures constitute a major portion of the basic framework of medical management.

If in judging a method of treatment one is guided by objective evidence of its efficacy, by its simplicity, by the permanence of response, and by its cost to the patient, one is less likely to adopt undesirable forms of therapy.

Treatment of vascular disease has become increasingly efficacious because of the cooperation between internist, surgeon, and physiatrist. Diseases are recognized earlier and treatment begun before irreversible damage leads to the loss of an extremity. The fundamental framework of treatment rests on a sound physiological basis. It is this rather than any specific method that has improved the prognosis for the patient with vascular disease.

Multiple Sclerosis—Its Diagnosis and Treatment

A. B. Baker, M.D. In THE WISCONSIN MEDICAL JOURNAL, 50:3:245, March 1951.

Multiple sclerosis is a fairly common chronic disease of the nervous system of undetermined etiology. It is a disease of the younger age group, over 75 percent of the patients being between the ages of 20 and 40 years.

Because of the variable nature of this disease, it is extremely difficult to describe the clinical features of this illness, since two cases rarely are similar.

In spite of the fact that there is, at present, no specific treatment for multiple sclerosis, the physician actually finds himself in no different position than he does in many other medical diseases.

Physical therapy is of utmost importance in the treatment of multiple sclerosis. It is not aimed at altering

the pathology or the course of the illness but merely at directing the patient as to how to handle himself in spite of his disabilities and to use his residual capacities to the fullest extent.

Immobilization should be avoided in this disease. The patient should be encouraged to be active in spite of his limitations. Inactivity on the part of such a patient will greatly increase his limitations and will hasten complications, such as pneumonia, bed sores, contractures, and so forth. On the other hand, the activity of the patient never should proceed to a point of physical exhaustion. These patients must be guided to maintain their activities within their capabilities.

Specific physical therapy procedures can be aimed at strengthening the remaining musculature, training other intact muscles to perform substitute movements for involved musculature, and the application of such devices as braces, crutches, and so forth, to help compensate for the various disabilities.

Although there is no specific treatment for this disease, the patient should be treated symptomatically and should be taught to adjust to his disabilities.

Stress situations should be avoided in multiple sclerosis, since they tend to aggravate the course of the illness.

Strength of Healing in Tendons of Denervated Muscles

Benjamin F. Lounsbury, M.D. In QUARTERLY BULLETIN OF NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 25:1:47, Spring 1951.

Lacerations of tendons occur relatively frequently among the injuries sustained by men who work with their hands. Such wounds, often seemingly trivial, usually not spectacular, may rob a man of his means of livelihood. It is no wonder then that the processes by which wounded tendons may be restored to normal function should have been studied extensively. One of the most important investigations of tendon healing within recent years was carried out by Mason and Allen. They produced experimental evidence to show that the tensile strength of healing tendons is greatly enhanced by permitting some function of those tendons in the later stages of their healing.

The experiments performed in this investigative study have demonstrated the effect of tonus on the tensile strength of healing tendons. They also have demonstrated the changes which occur in a muscle following the division of its nerve supply and have shown the nature of the reparative process in the tendon of such muscle. From these demonstrations, the following conclusions have been drawn:

(1) If the tonic contractions of a muscle be abolished by denervation of the muscle, healing of its tendon following primary suture is appreciably weakened.

(2) The tensile strength of the "denervated" healing tendon may be restored to that of the healing tendon of a normal muscle by restoring the pull of tonic contractions on its proximal stump.

(3) Passive movement of a healing "denervated" tendon greatly increases its strength.

Effect of Immobilization in Various Positions upon the Weight and Strength of Skeletal Muscle

T. B. Summers, M.D., and H. M. Hines, Ph.D., Iowa City. In ARCHIVES OF PHYSICAL MEDICINE, 32: 3:142, March 1951.

Evidence from numerous sources indicates that prolonged immobilization of a limb leads to atrophy in the affected muscles. The effects of the immobilization in different positions of fixation upon the muscle mass and functional states are less well understood.

This study was made on the effects of immobilization in various positions upon the weight and strength of the gastrocnemius and soleus muscles in a total of 59 adult cats. The muscles were immobilized in neutral, shortened, and stretched positions for 14, 28, and 42 days.

Immobilization in all three positions caused atrophy and loss of strength in the gastrocnemius and soleus muscles. The muscle weakness was due in part to atrophy and in part to damage to the tension-developing mechanisms.

The extent of atrophy was greatest in muscles immobilized in the shortened position and was least in the stretched or extended position. The stretched soleii showed hypertrophy at 14 days of immobilization and atrophy was not presented until after 28 days. Immobilization in the neutral or resting position proved to be the least deleterious to muscle. In this position no one muscle group is conserved at the expense of another.

Cardiovascular Manifestations in Acute Poliomyelitis

Louis Weinstein, M.D., and Alexis Shelokov, M.D. In THE NEW ENGLAND JOURNAL OF MEDICINE, 244: 8:281, February 22, 1951.

Abnormalities of the electrocardiogram occur frequently in the acute phase of poliomyelitis. Their appearance is associated with the severity of the infection, and not with the age of the patient.

Hypertension is relatively common in acute poliomyelitis. Its development in most cases is probably related to hypoxia; return to the normotensive state can be produced by maintaining adequate ventilation.

Acute pulmonary edema is common in fatal cases of the bulbar forms of poliomyelitis. Careful management of fluid intake in patients with bulbar disease is necessary; intravenous hydration is probably best avoided.

Myocarditis occurs in poliomyelitis. The mild form is probably hypoxic in origin, whereas the severe form may be due to invasion of the heart by the virus.

Sterile verrucous endocarditis may occur in poliomyelitis.

The problem of the cardiovascular disturbances in poliomyelitis needs further study. Of particular interest is the eventual fate of patients with cardiac abnormalities who survive an attack of this disease.

Rehabilitation of Poliomyelitis Patients

George G. Deaver, M.D., New York City. In POSTGRADUATE MEDICINE, 9:2:155, February 1951.

The physician must assume the responsibility for the patient until he attains the maximum functional capacity to meet the demands of daily living and working. To attain this objective may require years of supervised treatment, in all stages of the disease.

The Acute Stage: After admission to the hospital, the usual method of treatment for a patient with poliomyelitis is as follows: (1) Maintenance of proper fluid and food intake and elimination of body wastes. (2) Proper lying position in bed. Prevention of prolonged back lying. (3) Relief from pain and tenderness. Drugs are not effective and often dangerous. Moist heat in the form of hot packs tends to relax tense muscles and relieve pain. (4) Passive stretching is started as early as possible. The parts of the body

should be moved gently, stopping before the patient has pain and before there is muscle spasm.

The Convalescent Stage: When pain and tenderness are no longer present, the second step in the treatment program is to (1) evaluate the return of muscle strength, (2) start muscle reeducation to the weak muscles, and (3) prevent deformities.

The Chronic Stage: After a period of approximately two years, we can expect no further return of muscle strength. If the patient has received adequate medical and physical treatment there are not likely to be any deformities. The treatment at this stage is to teach the patient, by means of braces, crutches, gadgets, and the remaining muscle strength, to perform as many as possible of the activities necessary for daily living and working.

Neurosympathetic Disturbances in Poliomyelitis: Trophic Disturbances

H. Zellweger and H. Morf. In HELVETICA PAEDIATRICA ACTA, Basel, 5:401, November 1950. Abstracted in JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 145:9:681, March 3, 1951.

Trophic disturbances in the late stage of poliomyelitis may involve the skin, muscles, and bones. The skin may be cold and damp and show a reddish-blue discoloration associated with thinness, glossiness, and desquamation. The musculature atrophies, as revealed by a decrease in circumference. This atrophy is a result, not only of the trophic disturbances, but also of inactivity. Trophic disturbances in the bones are manifested by osteoporosis, which is severer than that resulting from inactivity. Whereas impairment of motor function often is improved or remains stationary after the acute inflammatory stage of poliomyelitis, the trophic disturbances have a tendency to increase with time, and trophic ulcers may result. The trophic disturbances are attributable to changes in the vasomotor nervous system. Capillaroscopy, skin temperature readings, and oscillometric measurements provide objective evidence of these trophic disturbances. During the initial phase skin temperature and oscillometric response are increased on the affected side, but during the paretic stage both these measurements are decreased in comparison with the unaffected side. Treatment aimed at overcoming these vasomotor changes should become an essential part of poliomyelitis therapy. The authors describe the results obtained with physical therapy and sympathectomy.

Rehabilitation in Urological Surgery

Frank O'Gorman, M.B., Ch.B., M.R.C.P., F.R.C.S. In BRITISH JOURNAL OF PHYSICAL MEDICINE, 14:2:37, February 1951.

Following urological operations, respiratory exercises are carried out, beginning in many cases on the same day. Active bed exercises are practiced from the first postoperative day under the supervision of the physical therapist. Gentle massage and stroking movements assist the circulation, particularly in elderly patients, but must never replace active movements. Early ambulation is of vital importance where permitted by the general condition and nature of the operation, especially in the aged. It is now proved that the greatest prophylactic against pulmonary embolus is early active movement and ambulation.

It must be realized that surgical operation constitutes only one item in the rehabilitation program. Together with physical medicine and its application in therapy, with occupational therapy, psychosocial adjustment, and vocational retraining, it plays its part in the combined effort to restore each patient to the fullest possible life compatible with his ailment and disability. In no branch of medicine or surgery can rehabilitation achieve more conspicuous success than in urology.

Polio in Pittsburgh

(continued from page 275)

purpose of doing discharge muscle examinations and giving home instructions to parents regarding exercise and activity.

The writer's responsibility for the program included finding a substitute in the event that anyone could not report as scheduled, and conferring with the chief physical therapist of the hospital twice weekly by telephone and in person on Sunday. Through this method of coordination, the mechanics of the plan ran as smoothly as any emergency measure could.

The hospital provided dinner for the evening workers, which proved to be a great time-saver, since all were on regular duty at their respective hospitals until 4:30 or 5:00 P.M., and all traveled ten to twenty miles to reach the Municipal Hospital. The cooperation of all hospital personnel was commendable, the morale of the patients high, and the work of the volunteers praiseworthy.

Originally the plan was set up for the month of October, but, since 57 more cases were admitted during the month, it was decided to continue the program through November, and, finally, up to December 15.

The volunteer group was naturally most gratified at the success of its program. We were also not a little surprised that, on the first such attempt, our purpose was accomplished with a minimum energy investment in organizational detail, and with so equal a sharing of responsibility. Looking to the future, we should like to consider the place of nonprofessional people who have indicated their desire to help. The essential structure of the program would remain as outlined here, because the members of our emergency unit believe the simplicity of the plan to have been a prime factor in its efficiency.

Meet Our New Contributors

Kathryn L. Kelley, Director of Physical Therapy, D. T. Watson School of Physiatrics, Leetsdale, Pennsylvania. Miss Kelley received a bachelor of science degree from the College of New Rochelle and had her physical therapy training at D. T. Watson. She is a member of the American Physical Therapy Association and the American Registry of Physical Therapists.

Roxie Morris, Assistant Professor, University of Southern California Physical Therapy Department. Mrs. Morris received a B.A. from Iowa State Teachers College and an M.A. from the University of Southern California. She had her physical therapy training at Children's Hospital School of Physical Therapy, Los Angeles. Mrs. Morris has been an instructor of physical education and was a staff physical therapist at Cedars of Lebanon Hospital, Los Angeles. Before assuming her present position she was Assistant Director of the Los Angeles School of Physical Therapy (Children's Hospital). She is a member of the American Physical Therapy Association and of the American Registry of Physical Therapists.

Leon L. Rackow, M.D., Chief, Continued Treatment Service, Veterans Administration Hospital, Montrose, New York. Dr. Rackow was formerly with the Veterans Administration Hospital in Tuscaloosa, Alabama.

William A. Spencer, M.D., Medical Director, Southwestern Poliomyelitis Respiratory Center. Dr. Spencer is a graduate of Georgetown University and Johns Hopkins Medical School. He served as an intern and later an assistant resident in pediatrics at Johns Hopkins Hospital and Sydenham Hospital. Dr. Spencer served as a captain in the medical corps of the U. S. Army, and later became an instructor in the Department of Pediatrics at Baylor University. He is now an Associate Professor, Department of Physiology, Baylor University College of Medicine in Houston.

Clarice Banning Spindle, R.N., Advisory Nurse, Virginia State Department of Health. She received a bachelor of science degree from the College of William and Mary and is also a graduate of the Morrow School of Nursing. Miss Spindle has attended courses at Western Reserve University and the University of Michigan, in addition. She has held positions as Educational Supervisor, I.V.N.A., Richmond, Va.; and Nursing Director, Public Health Nurses Association, Charleston, W. Va.

Zachary Taylor, Chief, Physical Therapy, Veterans Administration Hospital, Tuscaloosa, Ala. Mr. Taylor received his physical therapy training at the Lindlahr School of Physiotherapy in 1923. He has served as a staff physical therapist at veterans hospitals in Northport, N. Y., Bedford, Mass., and Oteen, N. C. Mr. Taylor has also been Chief, Physical Therapy, at the veterans hospital in Fort Lyon, Colo.

Kathryn Wheeler, R.N., Physical Therapy Consultant, southwest area of Virginia. Miss Wheeler received her R.N. at Johnston-Willis Hospital in Richmond, Va., and her B.S. and her certificate in public health nursing from the College of William and Mary. She received her physical therapy training at the D. T. Watson School of Physiatrics. Miss Wheeler has done orthopedic public health nursing in Virginia; she has served as a physical therapist at the Medical College of Virginia Hospital; and she was Chief Physical Therapist at the Woodrow Wilson Rehabilitation Center, Va. She is a member of the American Physical Therapy Association, the American Registry of Physical Therapists, and the American Nurses' Association.

Book Reviews

The Story of My Psychoanalysis. *By John Knight. Pp. ix-225. Price, $2.95. New York: McGraw-Hill, 1950.*

The author, who writes under an assumed name, gives a very readable and personal account of his psychoanalysis in words of general usage. There are no passages of obscure meaning or of theoretical discussion which could confuse a reader who for the first time desires to obtain some idea of psychoanalysis. This book would be of especial value to those in an associated profession, or to a prospective patient and his family, if they have little or no knowledge of what analysis attempts to accomplish, of the actual procedure, or of the relationship between patient and analyst. A number of chapters are clearly autobiographical, and are of interest from the point of view of personality development in situations of personal stress within the family, particularly with respect to successive generations who have experienced the impact of different social cultures.

Reviewed by LOUISE R. HEWSON, *Director, Department of Psychology, Neurological Institute, N. Y. C.*

Atlas of Human Anatomy. *By Barry J. Anson, Ph.D., Professor of Anatomy, Northwestern University Medical School. Price, $11.50. 518 pages. Philadelphia and London, W. B. Saunders Company, 1950.*

Whether the reader is approaching anatomy for the first time, or doing a periodic review of the subject, this new atlas will be of value.

The contents are arranged regionally, and in serial section as they would be exposed by a dissector. Actual relationships are retained in the realistic illustrations made directly from dissected specimens. A minimum of diagrammatic material is used. Where variations from the usual occur in sufficient frequency, they are shown with the percentage of occurrence of each type and sub-type, as determined from the author's own examination of a stated number of specimens.

Coverage of material is as detailed and as complete as most dissectors could desire. Little space is given to detailed anatomy of the brain, understandably, for this is a special field in itself. Of particular note are two sections that frequently remain a mystery to the anatomy student who does not go on to further study in the field—the hand and the female pelvis.

Both student and graduate physical therapist will find this a valuable book, not only for the general coverage of anatomy, but also for the careful attention given to the muscles and their relation to vessels, nerves, and bone. However, it cannot be used as the sole text because there is no mention of the action of the muscles.

Reviewed by NADENE COYNE, M.D., *Intern, Philadelphia Gen'l Hosp.*

SCHOOLS OF PHYSICAL THERAPY

Approved by the Council on Medical Education and Hospitals of the American Medical Association
Graduates of these schools are eligible for membership in the American Physical Therapy Association

Name and Location of School	Medical Director and Technical Director	Entrance Requirements	Length of Course	Classes Start	Certificate, Degree, or Diploma
CALIFORNIA					
[1]Childrens Hospital Society, Los Angeles (in affiliation with University of California, Los Angeles)	Samuel S. Mathews, M.D. Sarah S. Rogers	a[3]-b[3]-d-e g[4]	14 mo 4 yrs	Sept	Certificate Degree
[1]College of Medical Evangelists, Loma Linda	F. B. Moor, M.D. R. Wm. Berdan	a-b-c-d-e g	15 mo 4 yrs	Sept	Certificate Degree
[1]Univ. of So. California, Los Angeles	Charles L. Lowman, M.D. Charlotte W. Anderson	a-b-d-e g[4]	14 mo 4 yrs	Sept Sept-Feb	Certificate Degree & Cert.
[1]Univ. of California Medical School, San Francisco	Lucile M. Eising, M.D. Margery Wagner	d-e g	12 mo 4 yrs	Sept	Certificate Degree
[1]Stanford Univ., Palo Alto	Wm. Northway, M.D. Lucille Daniels	a-d-e-f g[4]	12 mo 4 yrs	Jan-June or Sept	Certificate Degree
COLORADO					
[1]Univ. of Colorado Medical Center, Denver	Harold Dinken, M.D. Mary Lawrence	a[3]-b-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
ILLINOIS					
Northwestern Univ. Medical School, Chicago	Emil D. W. Hauser, M.D. Gertrude Beard	a-b[3]-d-e	12 mo	Oct	Certificate
IOWA					
[1]Univ. of Iowa, Iowa City	W. D. Paul, M.D. Olive C. Farr	b-e	12 mo	Sept	Certificate
KANSAS					
[1]Univ. of Kansas School of Medicine, Kansas City	Donald L. Rose, M.D. Lilyan G. Warner and Ruth Monteith	a-b-d-e g[4]	12 mo 4 yrs	Feb-Sept	Certificate Degree
MASSACHUSETTS					
Bouve-Boston School of Physical Education, in affiliation with Tufts College, Medford 55	Howard Moore, M.D. Constance K. Greene	g[4]	4 yrs	Sept	Degree
Simmons College, Boston	Wm. T. Green, M.D. Arthur L. Watkins, M.D. Shirley Cogland	a[3]-b-d-e g[4]	16 mo 4½ yrs	Sept	Certificate Degree
Boston Univ.-College of Physical Education for Women, Sargent, Cambridge	Kenneth Christophe, M.D. Adelaide McGarrett	a-b-d-e f-g[4]	12 mo 2 or 4 yrs	Sept	Certificate Degree
MINNESOTA					
[1]Univ. of Minnesota, Minneapolis	Frederic J. Kottke, M.D. Ruby M. Green	d-f-g[4]	2 yrs	Sept	Degree
[1]Mayo Clinic, Rochester	Earl C. Elkins, M.D. Harry Keown	a-b-c-d-e	2 yrs	Sept	Certificate
MISSOURI					
[1]Washington Univ. School of Medicine, St. Louis	Sedgwick Mead, M.D. Beatrice F. Schulz	f-g[4]	2 or 4 yrs	Sept	Degree
[1]St. Louis Univ. School of Nursing, St. Louis	A. J. Kotkis, M.D. Sr. Mary Imelda	f-g[4]	2 or 4 yrs	Jan-Sept	Degree

Name and Location of School	Medical Director and Technical Director	Entrance Requirements	Length of Course	Classes Start	Certificate, Degree, or Diploma
NEW YORK					
Albany Hospital, Albany (in affiliation with Russell Sage College, Troy)	John W. Ghormley, M.D. Catherine Graham	a-b-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
[1]Columbia Univ., New York	Wm. B. Snow, M.D. Floy Pinkerton	a-b[3]-e f	12 mo 2 yrs	Sept	Certificate Degree
[1]New York Univ., School of Education, New York	George G. Deaver, M.D. Elizabeth C. Addoms	a[3]-b[3]-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
NORTH CAROLINA					
[1]Duke Univ., School of Medicine, Durham	Lenox Baker, M.D. Helen Kaiser	a[3]-b[3]-d-e	15 mo	Oct	Certificate
OHIO					
[1]Cleveland Clinic, Cleveland	S. G. Gamble, M.D. Mildred Heap	a-b-d-e	12 mo	Oct	Certificate
PENNSYLVANIA					
[1]D. T. Watson School of Physiatrics, Leetsdale	Jessie Wright, M.D. Kathryn Kelley	a[3]-b[3]-d-e	12 mo	Oct	Diploma
[1]Univ. of Pa. School of Auxiliary Med. Serv., Division of Physical Therapy, Philadelphia	George M. Piersol, M.D. Dorothy Baethke	e g[4]	12 mo 4 yrs	Sept-Feb Sept	Certificate Cert. & Degree
TEXAS					
[1]Hermann Hospital, Houston	Oscar O. Selke, Jr., M.D. Mary Elizabeth Kolb	a-b-d-e	12 mo	Oct	Certificate
[1]Univ. of Texas School of Medicine, Galveston	G. W. N. Eggers, M.D. Ruby Decker	a-b-e d	12 mo	Jan	Certificate Degree
VIRGINIA					
[1]Med. College of Va., Baruch Center of Phys. Med., Richmond (in affiliation with Richmond Prof. Inst.)	Walter J. Lee, M.D. Susanne Hirt	a-b-d-e g[4]	12 mo 4 yrs	Sept	Diploma Degree
WISCONSIN					
[1]Univ. of Wisconsin Med. School, Madison	Harry D. Bouman, M.D. Margaret Kohli	a-b-c-e-f g[4]	12 mo 4 yrs	Sept Sept-Feb	Certificate Cert. & Degree
U. S. ARMY MEDICAL SERVICE					
(a) Medical Field Service School, Brooke Army Medical Center, San Antonio, Texas, and	Charles D. Shields, Lt. Col., M.C. Agnes P. Snyder, Major, WMSC	b-e	12[2]	Mar-Sept	Certificate
(b) Fitzsimons Army Hospital, Denver, Colorado	H. B. Luscombe, Col., M.C. Harriet S. Lee, Major, WMSC	Completion of Medical Field Service School			
(c) Walter Reed Army Hospital, Washington	John H. Kuitert, Lt. Col., M.C. Brunetta Kuehlthau, Major, WMSC	Completion of Medical Field Service School			

Entrance Requirements

FOR ONE-YEAR COURSE

a = Graduation from accredited school of nursing.
b = Baccalaureate degree with major in physical education.
c = Two years of college with science courses.
d = Three years of college with science courses.
e = Baccalaureate degree with required science courses.

FOR TWO-YEAR COURSE

f = Two years of college with science courses.

FOR FOUR-YEAR COURSE

g = High school graduation.

Footnotes

[1]Male students admitted.

[2]12 months' course includes training at the Medical Field Service School and Fitzsimons or Walter Reed Army Hospitals. Apply directly to the Surgeon General, Department of the Army, Washington 25, D. C.

[3]Additional college science credits required.

[4]Advanced standing students accepted.

Please address initial correspondence to the School of Physical Therapy in the institutions listed. Tuition and fees will vary from school to school.

Classified WANT-ADS

WANTED—Qualified physical therapists in well-equipped Rehabilitation Center, General Hospital with diversified work of all types. Top beginning salary graded according to experience. Paid vacation and sick leave. Write immediately Robt. B. Wallace, M.D., Dir., Dept. of Phys. Med. and Rehab., Baton Rouge General Hospital, 3600 Florida St., Baton Rouge, La.

URGENTLY NEEDED—PHYSICAL THERAPIST for C.P. clinic in Red Bank, New Jersey. C.P. training desirable but not essential. Pleasant working conditions, good salary. Write, stating qualifications, to Cerebral Palsy Division, Crippled Children Commission, Dept. of Health, Trenton 8, N. J.

WANTED: Qualified physical therapist. Work in growing rehabilitation center. Attractive hours and salary open. State qualifications and salary; write Roy E. Patton, Executive Director, Crossroads Rehabilitation Center, 3001 North New Jersey, Indianapolis, Ind.

PHYSICAL THERAPIST, registered or APTA member only, wanted for rehabilitation institute in Washington, D. C. Treatment by muscle re-education of paralysis resulting from neuromuscular diseases or injuries. All therapy given under close supervision of physicians. Excellent beginning salary with regular increases. Paid vacations; sick leave; free hospitalization insurance. Give age, references, picture, and date of availability. Address replies to Box 36, care of the Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

WANTED: Qualified physical therapist to work in a fully-equipped department in a general hospital. Contact Ella Mosimann, Physical Therapy Department, Sherman Hospital, Elgin, Illinois.

WANTED: Qualified physical therapist for cerebral palsy school and training center under medical direction of Dr. W. M. Phelps. 5-day week, 2 weeks paid vacation quarterly. On salary during training period. Contact: Lois Phenicie, Children's Rehabilitation Institute, Cockeysville, Maryland.

PHYSICAL THERAPIST to work with pre-school cerebral palsied children in out-patient and nursery school center. Instruction to parents for home training program. Good salary. Position presently available. Please contact H. Harold Hymans, Executive Director, 2917 Grand Avenue, Des Moines.

WANTED: Qualified physical therapist (female) for expanding clinic—6 orthopedic surgeons, 2 physical therapists. Good working conditions. For details, address Maria M. Kennedy, Physical Therapy Department, Miller Orthopedic Clinic, 121 West 7th St., Charlotte, N. C.

QUALIFIED PHYSICAL THERAPIST for staff position in orthopedic hospital in Memphis, Tennessee. Address replies to Box 86, care of the Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

WANTED: By August 15, 1951, a qualified physical therapist to head department in teaching hospital. Contact C. A. Robb, Superintendent, Roper Hospital, Charleston, S. C.

RATES

The rate per insertion is 75c per line. Typewrite your advertisement carefully and count 50 characters and spaces per line.

ALL WANT-ADS MUST BE PAID FOR IN ADVANCE. Make checks or money orders payable to the American Physical Therapy Association.

Institutions or physical therapists who do not wish their identity known may arrange for Blind Ad Code No. All such want-ads must include the following which will be counted as 2 lines:

Address replies to ..... care of **The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.**

It is requested that descriptive adjectives be used instead of actual figures when referring to salary.

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It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication; the advertiser agreeing that the Editorial Commitee shall be the sole and exclusive judge of the acceptance of any advertisement.

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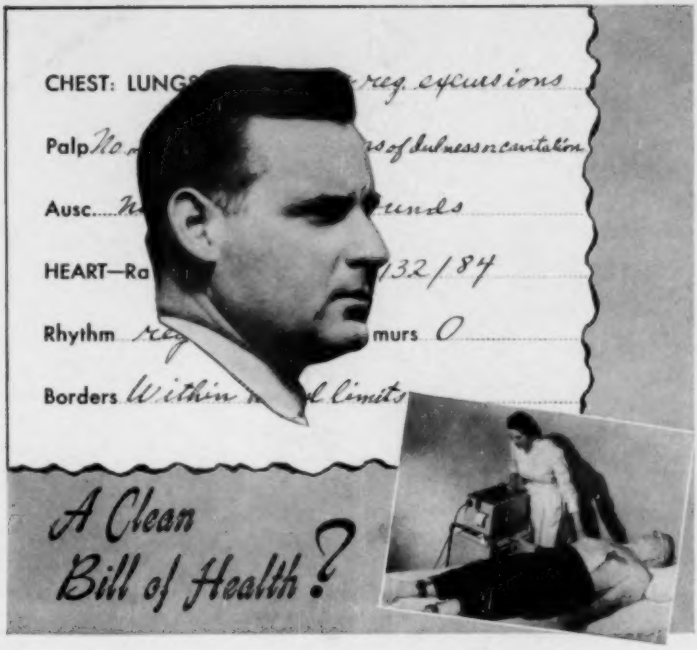

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